40 Rock

POPULAR Computing WEEKLY

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This Week

News Desk

New micro from Amstrad

AMSTRAD the British hi fi manufacturer, is to launch a microcomputer

The machine will sell for around £200 and be a direct competitor for the new Elan Both are scheduled to arrive in late Spring

The Amstrad machine features a built in colour monitor and cassette deck It is Z80-based has 64K Ram expandable to 4M and includes a full-size full-travel keyboard with separate numeric pad The computer will have similar graphics to the BBC machine and a 3 channel six octave sound capacity The micro has a Centronics interface provision for an add on disc interface but no RS232

The machine is currently being manufactured in Japan and will be sold through high street stores and discount electronics shops One of the stores evaluating the micro is Comet which already sells other Amstrad lines Said Comet's Nick Leighfowler

We have yet to see a preproduction version but we will decide whether to take it when we [illegible]

War of the Worlds for home micros

A COMPUTER game based on H G Wells' book *War of the Worlds* will be released on six home micros early this year

This computer game is the result of a deal between software house CRL and ORP the New York company owned by Jeff Wayne which holds the video game rights to the book

Jeff Wayne — one time member of the band ELO — has already concluded a number of projects based on the book including a double-record album which has sold 4m copies world-wide four British chart singles a concert at the Albert Hall and a stage-show

The video game will be produced initially for the Spectrum, Oric Commodore 64

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SUNSHINE

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How to submit articles
Articles which are submitted for publication should not be more than 3 000 words long The articles and any accompanying programs should be original It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted

All submissions should be typed and a double space should be left between each line Please leave wide margins

Programs should whenever possible be computer printed

We cannot guarantee to return every submitted article or program so please keep a copy If you want to have your own program returned you must include a stamped addressed envelope

Accuracy
Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

This Week

Editorial

1984 Brave new world Somehow it's all crept up on us sooner than expected

George Orwell's version of the future, written in 1948 has proved to be both alarmingly prophetic and wildly inaccurate But then *1984* was never meant to be taken as a literal forecast, unlike Nostradamus s prophecies

The world of *1984* is not set in any particular year, rather it is a picture of life as it could develop However chilling it may be it is but one possible scenario among hundreds of others

Computers and other technological advances, such as atomic power, offer immense possibilities for good or ill in almost equal measure It is up to us to decide how we will use this knowledge, and thus determine our future

Computers can be used as easily for governmental repression as for individual freedom However, the massive distribution of computers in the UK is a powerful argument in favour of their being used for the benefit of all rather than just a few

Winston Smith, Orwell's protagonist in *1984*, had no defence against Big Brother "watching over" him. We are nowhere near that state, but there is little room for complacency *1984* is always closer than you think

Next Thursday

Can you find the winning combination at noughts and crosses? Find out in next week's classic star game for the 16 or 48K Spectrum by Barry Ashfield


martech games
...a spectacular range of software
BLASTERMIND!
SPECTRUM 48k £5 50
At first glance this might seem to be just another version of a very popular game How wrong can you be!!! True the start is simple enough The Spectrum picks a code of numbers or colours with a selection of levels of difficulty — and invites you to do the same You then take it in turns to guess each others code from the clue supplied after each guess An extremely well written fast and very clearly displayed game with almost inevitable defeat
This was exactly as intended but unfortunately something went wrong During the programming strange uncomplimentary messages began to appear on the screen At first they were so few they were not taken too seriously but soon they could no longer be ignored Somehow the Spectrum had been given a personality — a rather devious supercilious dislikeable hateful! horrible mind
Side B contains a version of the game compatible with the excellent Currah µSpeech unit — even worse!
The Quest of Merravid
VIC 20 (16k) £7.95 or Commodore 64 £7 95
A really challenging and enjoyable adventure written by a confirmed adventure addict who grew tired of the ease with which he solved other adventures himself Will accept and act on sentences containing up to nine words
The adventurer becomes Merravid charged with the task of finding taking and then returning the magic Firestone of the Dwarves However overcoming the many novel and original hazards is no easy matter Careful and imaginative thought is required if progress is to be made and the Firestone tracked down to the lair of the Dragon of Thargon Even then the Dragon has to be defeated and the stone retrieved A compulsive extremely enjoyable and very user friendly adventure
COMPUTER MODERATED BOARD GAMES
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The original and completely unique two player games of cunning and strategy, strictly for more demanding games enthusiasts
CONFLICT — a full scale military and economic battle demanding clear thought and decisive action
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Planetary war

Continued from page 1

BBC, Electron and Dragon computers. Sales of the program are expected to top 70,000 in the first 12 months.

A development version has already been written which runs on the One. The program will be structured as a 10-part arcade game. Explained CRL's Clement Chambers: "The book has 10 distinct events which we can turn into chapters in a multi-part game. It will be necessary to get through each part before going on to the next."

Each of the parts will be different, yet the whole program will fit into 48K. The *War of the Worlds* games will be written by CRL author Nigel Taylor. Previously he wrote *Escape from Manhattan* for the ZX81.

The Spectrum and One versions will be launched on March 1, with the Commodore 64 conversion following shortly thereafter.

Work on the game began in September. Said Clement: "Nigel sent in his game of *War of the Worlds* and I approached Jeff Wayne for the rights."

Coincidentally, Jeff Wayne had been considering the possibilities of producing a video game of *War of the Worlds*. He had talked to a number of companies including Sega, Coleco, Atari, Mattel and Psion. He said: "We have

Clement Chambers (centre) with Jeff Wayne (right) and Jerry Wayne

been very patient. Just as the music had to stand up as great music for the concept record album, so the game has to stand up as a great game.

"In parallel with Clement seeking us out we had been talking with computer companies for 18 months. Most of them wanted to pay outright for the rights to develop their own game based on the book. We would have had to relinquish creative control.

"Working with a company such as Clement's was the best seed to plant. The game will be marketed jointly by CRL and ourselves through CBS. Just as in the record industry, we will then have a master and we will be able to go back to these interested companies with a finished product.

"What we are trying to do is different — we are trying to add a purpose to a video game by drawing in elements from the music of the record and a great story. If Clement can do this then it is a breakthrough."

● Jeff Wayne and Clement Chambers are also involved with Wonderland, a 1,200-acre theme park to be built rather on the lines of Disneyland in Corby. The first stage of the development should be complete in mid-1987 and the *War of the Worlds* themes will feature prominently. Wonderworld will feature a computer park several acres in size and developments of the *War of the Worlds* video game into arcade machines and video-disc player technology are planned.

CTA piracy files stolen

A NUMBER of documents have been stolen from the offices of the Computer Trade Association.

The 12 files which have disappeared contained information relating to organised software piracy compiled over a period of six months by CTA

CTA secretary Nigel Backhurst

secretary Nigel Backhurst. He explained: "A number of individuals were mentioned in the papers in connection with piracy but there was nothing which could have been used as evidence."

The theft was discovered on Monday December 19 and the police are now investigating the crime. Apart from the documents, a number of pirated tapes were also stolen. Nigel said: "We can rebuild about 80 percent of the material, but it will take us six months, by which time it will be out of date."

The Guild of Software Houses estimates that sales revenue lost in 1983 because of piracy could be over £100m.

Games designer hitch

HURG, Melbourne House's games designer program for the 48K Spectrum has been delayed.

Although originally planned for sale in October, *HURG* is now scheduled to arrive later this month.

The problem has been caused by unforeseen difficulties with the program design. The main core of *HURG* is now written and it only remains for author William Tang, to put the finishing touches — score routines, number of lives.

The program, which will sell for £14.95, in many ways complements Quicksilva's existing *Games Designer* program. Both are menu-driven games-writing programs but, whereas Quicksilva's is ideal for scrolling games, Melbourne House's is for developing single display-type games with more complex backgrounds. *HURG* can be operated entirely using a joystick.

British micros at CES show

THIS week sees the start of the major US electronics trade fair in Las Vegas, the CES show.

Commodore is expected to display prototypes of its new home computer at the show. Apple will probably not reveal details of its new Macintosh micro, choosing to hold back until its official launch on January 24.

A number of British manufacturers will be at the show. Acorn will continue its attempt to push into the American education market, Dragon will show its Dragon 64 machine and Timex will try to regain lost ground with its Sinclair Spectrum derivative computer the 2048.

British software companies will also be to the fore with Virgin and Quicksilva planning to launch their products jointly in the US at the show.

Cheaper Dragons

DRAGON 32 prices are being forced down by shops undercutting the manufacturer's recommended price of £175.

Some retailers are now selling the basic machine for as little as £149 while Boots, the largest Dragon outlet, has cut the price to £159.95 which includes £43.80-worth of free software. The software on offer is Ampalsoft's *Basic Tutorial* program and three Microdeal games titles.

Commented Boots' merchandising controller John Flatman: "The Dragon is finding its right level in the market — clearly there has to be a price differential between a 64K machine like the Commodore 64 and a 32K machine such as the Dragon 32."

Rom prices down

SINCLAIR has brought its Rom cartridge game prices down into line with Commodore.

Six of the 10 titles available so far come down to £9.95: *Space Raiders*, *Planetoids*, *Pssst*, *Cookie*, *Hungry Horace* and *Horace and the Spiders*. The remaining four — *Jet Pac*, *Tranz Am*, *Backgammon* and *Chess* — stay at £14.95.

Chip problem for Elan

ELAN Computers has run into problems over the development of the ULA custom chip for its new Enterprise computer.

Elan Enterprise

Although Elan still promises machines in the shops in April, the difficulties have meant that the arrival of pre-production machines has had to be delayed by a month.

Software houses awaiting machines for software development purposes will not receive them until February 1984.

The Elan Enterprise — a Z80-based CP/M compatible micro with either 64K or 128K Ram — was first announced in September this year.

3D games

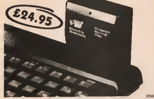
STEVE Turner follows his *3D Space Wars* game for Hewson Consultants with two more 3D games — *3D Seiddab Attack*, due in the shops in late December, and *3D Lunar Mission*, planned for January.

Both are for the Spectrum and cost £5.95.

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Now you can add another dimension to your games. Swap direction, swap functions, confuse your friends. In fact you can add almost any twist to your games with Stonechip's Programmable Joystick Interface.

You can also listen to them with Stonechip's Echo Amplifier.



Programmable Joystick Interface This also enables any Spectrum software to be used with a joystick, irrespective of which keyboard keys have been chosen for function

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Echo Amplifier How would you like to listen to the sound output from your ZX Spectrum without ear strain? The Stonechip Echo amplifier can do this for you as well as easing the tedium of saving or loading of tapes and enlarging the range of tape recorder compatibility with the computer The amplifier has volume control over a range adequate for most uses, and a tone control for harsh or mellow sounds A switched interface removes the need to swap leads during SAVE ing or 'LOAD ing Leads are left connected all the time and the desired function is selected on the three position switch by the user Use of the 'CUE' facility enables an audio cue to precede the program being 'SAVE d on tape, a decided advantage when searching through a multi program tape The Echo simply plugs into the Ear Mic and Power sockets of the computer and does not require an additional power supply The expansion port at the rear of the computer is left free for use with other peripherals and the unit is housed in an attractive case custom designed to complement the ZX Spectrum



STONECHIP ELECTRONICS

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Deviant ways

Although I find your magazine greatly entertaining, I feel that it is being defaced somewhat by that odious *Losers* "cartoon" Far from being in the least funny it insults even the most common intelligence

Also may I add that it appears to show the less able computer users an alternative field which they may wish to undertake — namely scribbling on their favourite computer magazine Without wanting to be overtly cynical, here is a scenario in keeping with those works published previously

Stylish toe-drawing depicts man playing game Loosely-defined box bears title, "Raging Kong Beast" Man with pouting cigarette says, "That was good but where have all my bananas gone?"

Moving on, I wish to complain about the publication of fifth-rate "educational" programs like *Elements* for the BBC Micro Abysmal structuring aside, this program can only take the place of the periodic table and encourages young people to delude themselves that they are revising when they type it in

However, the incorrectly titled *Dual* (sic) is a commendable example of worthwhile programming It offered inspiration to other beginners and had obviously given pleasure to its author

Contrary to the views of my colleagues, I see the writing of games programs as more educationally viable than the writing of educational programs Such an example is found in the programming column where a darts game was used to exemplify techniques in structuring

Would you try to reduce the amount of material printed for the ZX Spectrum I feel there are enough books, etc, to support this hideous little plug socket for many more months to come Much of the articles are *déjà vu* while a lot of BBC information has yet to be revealed

May I also add that I find it insulting to the Automata establishment to see the graffiti-like word "Advertisement" placed above their advert. I hardly think anyone will mistake it for Ziggurat or the editorial

Also, the idea of introducing a high score table with the intention of encouraging people to compete in their deviant ways seems ludicrous

However, may I wish you a happy New Year

L Hewelly
6 Ffordd Llanelh
Rhosych
Wrexham
Clwyd

Games cheaters

I have been buying your magazine regularly and enjoy it very much I think the point of cheating with high scores is very important, but I think that giving away how to *Poke* extra lives into a program or giving away what to do to get extra lives from a program is wrong! (*PCW* 17-23 and 24-30 Nov)

Some people enjoy playing these games and I don't think they would want to know how to cheat at their games It takes a lot of skill to get a "megascore" at *Jetpac* or *Planetoid* and cheating doesn't require much skill!

PS Keep the magazine just as it is But an arcade corner would be nice!

Peter Jones (aged 13)
99 William Street
Dalbeattie
Scotland

Popeye the sailor man

Catherine French of Pontypool wrote (*PCW Volume 2, number 46*) explaining that she had enjoyed playing the Arcade version of *Popeye*, and asking about its availability as a home video game

I thought that I would write and give you and your readers an update on this fine arcade game We at Parker Video Games hold the exclusive licence for *Popeye* on all formats and our current plans include the launch of four video game systems and two home computer systems Atari 2600, Colecovision, Intellivision, Philips G7000, Atari Home Computers and Commodore 64 Video game system formats are currently available, and indeed *Popeye* was voted the number 2 video game, second only to *Donkey Kong* in a recent *Toys International and the Retailer* magazine chart

I hope that some of your readers will soon be helping Popeye to escape the clutches of the evil Brutus and winning the heart of Olive Oyl!

Rae Potter
UK Product Manager
Parker Video Games
The Palitoy Company
Coalville
Leicester

Program protection

After spending £250 on a disc drive for my CBM-64 I was very frustrated to find that only about half of my tape based utility and game programs could be transferred onto disc because of the protection within the programs

I understand that the software houses and publishers must protect their merchendise from the pirates, however, even with the most sophisticated protection it is still possible to make audio copies direct from tape to tape with two ordinary £15 cassette recorders

The thing that puzzles me is why some software is fully protected and others have no protection at all, just compare *Hungary Horace* against *Monopole*

Like 99 9 percent of your readers I am a law abiding citizen and have no interest of producing and selling pirate software I just wish to use my computer to its full capability and to me this means being able to transfer my tape based programs (on which I have spent a lot of hard earned cash) onto disc which loads 8-10 times faster and is less prone to load errors, leaving the originals for backup

Do you feel that if someone like myself who wanted to transfer programs onto disc approached a software house and was willing to sign a declaration that copies would not be made for resale, hire or for friends for free, they would be willing to supply the necessary information? After all, more and more disc drives are being sold and the frustration among us is going to get much higher and this could result in the companies that use less protection becoming more popular then their competitors

On the other hand, reasonably priced cartridges could be the answer, no loading time and almost imposable for copies to be made Food for thought, software houses and publishers!

Paul H
Tonbridge
Kent

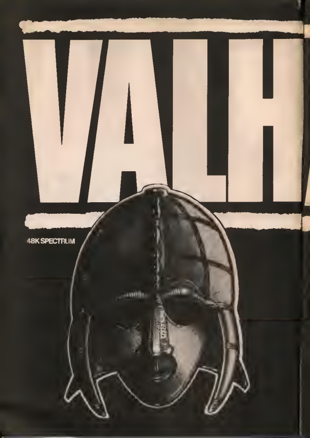
Cyborg information

I happen to know about the Cyborg system and since someone was requesting information about it (*PCW*, Vol 2, No 46) I thought I would let you know the details

The system includes the disc drive, one personality module and one system nucleus It has a capacity of 720K on a single floppy (320K per side) and is compatible with ZX81, Spectrum and Oric (and shortly for Atari, Vic20, 64, Dragon, BBC, etc)

The personality module translates control and data signals of the computer, so if you change your micro you only need to change the module The price is £200 and you can order it from
Haytech France,
68 Bd de Port-Royal,
75005 Paris
Tel (1) 354 86 66

C Charles
Byzyiuou 16
40 Eklisies
Thessaloniki
Greece


VALH
48K SPECTRUM

ALLA

MOVI SOFT



LEGEND

Balloonist

A new game for the BBC B by James Morle

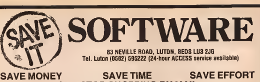
Balloonist runs on a BBC model B microcomputer and makes use of the machine's excellent graphics capabilities.

You are coming to the end of a pleasant day's ballooning and have found your landing site but there is one problem. The landing field is covered with trees and bushes and there is only one place to land (which is marked with a red line).

To make your game even harder, there is an airport in the next field, and planes are frequently taking off at different heights. ■



```
10REM****************
20REM* Balloonist *
30REM*            *
40REM*     By     *
50REM*            *
60REM*  J.Marle   *
70REM****************
80MODE 7
90PROCoff
100PROCinstruct
110MODE 2
120PROCoff
130PROCsetup
140PROCtake_input
150GOTO 140
160*********************************
170DEF PROCoff
180VDU 23;8202;0;0;0;
190ENDPROC
200*********************************
210DEF PROCinstruct
220PRINTTAB(10,0);CHR$129;"Balloonist"
230PRINTTAB(15,2);CHR$131;"By J.Marle"
240PRINT''';CHR$134;"This is a slightl
y different lander"';CHR$134;"type game
 You are in control of a"';CHR$134;"hot
air balloon, and are in your "';CHR$134;
"decent to earth.To move you balloon"';C
HR$129;"the controls are as follows:-"
250PRINT''CHR$134;"Left Thrust:";CHR$1
31;"Z"
260PRINT'CHR$134;"Right Thrust:";CHR$1
31;"X"
270PRINT'CHR$134;"Upward Thrust:";CHR$
131;"RETURN"
280PRINT''CHR$129"P.S. Watch out for l
ow flying planes''!"
290PRINTCHR$136;CHR$130;"Good Luck'!"
300PRINT'CHR$134;"Press a key to start
....";:A$=GET$
310ENDPROC
320*********************************
330DEF PROCsetup
340VDU 23,224,56,126,255,255,255,255,2
38,198
350VDU 23,225,120,66,36,36,126,60,36,6
0
360VDU 23,226,127,90,90,36,126,36,60,6
0
370VDU 23,227,56,120,255,255,255,255,1
26,56
380VDU 23,228,24,24,20,20,24,20,20,88
390VDU 23,229,0,0,20,60,126,120,56,0,0
,0
400VDU23,230,-1,-1,-1,-1,-1,-1,-1,-1
410VDU23,231,120,193,225,255,255,240,3
,0
420VDU23,232,0,0,120,224,238,240,240,2
430X=RND(1000)+100
440Y=1000
450COLOUR 2
460PRINTTAB(0,28);CHR$227;" ";CHR$227;
CHR$227;" ";CHR$227;"  ";CHR$227;"
 ";CHR$227;CHR$227;CHR$227;
470COLOUR 3
480PRINTTAB(0,29);CHR$228;" ";CHR$228;
CHR$228;" ";CHR$228;"  ";CHR$228;"
 ";CHR$228;CHR$228;CHR$228;
490COLOUR 1
500PRINTTAB(9,29);"___";
510COLOUR 2:PRINTCHR$229;CHR$229;" ";C
HR$227;CHR$229
520L$=STRING$(20,CHR$230)
530PRINTTAB(0,30);L$;
540TCHAR=224
550GROUND=64
560PLANE=FALSE:PLANEX=0
570INC=0
580XINC=0
590ENDPROC
600*********************************
610DEF PROCtake_input
620IF INKEY(-98) THEN XINC=XINC-.4
630IF INKEY(-67) THEN XINC=XINC+.4
640IF INKEY(-74) THEN INC=INC+1:PROCman
("B"):ELSE INC=INC-1:PROCman("n")
650X=X+XINC:Y=Y+INC
660SOUND 3,-2,Y/10,1
670IF POINT(X,Y-56)=2 OR POINT(X,Y-23)
=2 OR POINT(X,Y)=2 PROCtree
680IF POINT(X,Y-64)=5 THEN PROCplane
690IF POINT(X,Y)=5 THEN PROCplane
700IF POINT(X,Y-23)=5 THEN PROCplane
710A=RND(5)
720IF A=3 THEN PLANE=TRUE
730IF Y-64<=GROUND THEN PROCcheck
740IF PLANE=TRUE THEN PROCPLANE
750ENDPROC
760*********************************
770DEF PROCman(S$)
780VDU5
790IF S$="B" THEN SCHAR=226:SOUND 0,-1
5,4,1:GOTO 810
800IF S$="POP!" THEN TCHAR=229:ELSE SC
HAR=225
810GCOL0,1
820MOVE X,Y:PRINTCHR$TCHAR
830GCOL0,3
840MOVE X,Y-32:PRINTCHR$SCHAR
850A=INKEY(5)
860GCOL0,0
870MOVE X,Y:PRINTCHR$TCHAR
880MOVE X,Y-32:PRINTCHR$SCHAR
890ENDPROC
900*********************************
910DEF PROClanded
920FOR B=100 TO 200 STEP 10
930FOR C=B TO B+20 STEP B/160
940SOUND 1,-15,C,1
950NEXT,
960CLS
970VDU 4
980COLOUR 3
990PROCcentre("You've done it!!!",3)
1000COLOUR 4
1010PROCcentre("Want a job ?!",5)
1020COLOUR 1
1030PROCcentre("Another Game ?",8)
1040*FX15
1050A$=GET$
1060IF A$="Y" THEN CLS:GOTO 120
1070VDU7:CLS:PRINT"Bye'":END
1080ENDPROC
1090*********************************
1100DEF PROCcrash
1110FOR B=-15 TO 0 STEP .2
1120SOUND0,B,4,1
1130NEXT
1140CLS
1150FOR A=1 TO 300
1160GCOL3,RND(7)
1170MOVE 640,512
1180DRAW RND(1280),RND(1023)
1190NEXT
1200A=INKEY(160)
1210CLS
1220VDU4
1230COLOUR 3
1240PROCcentre("What do you think",3)
1250COLOUR 6
1260PROCcentre("you are, a ZX81??!!",5)
1270COLOUR 2
1280PROCcentre("Another Game ?",8)
1290*FX15
1300A$=GET$
1310IF A$="Y" THEN CLS:GOTO 120
1320VDU6:CLS:PRINT"Bye!"
1330END
1340ENDPROC
1350*********************************
1360DEF PROCcheck
1370IF INC>=-4 THEN PROClanded:ENDPROC
1380PROCcrash
1390ENDPROC
1400*********************************
1410DEF PROCPLANE
1420IF PLANEX=0 THEN PLANEY=RND(27)
1430PLANEX=PLANEX+1
1440COLOUR 5
1450VDU 4
1460IF PLANEX>18 THEN PRINTTAB(PLANEX-1
,PLANEY);"  ":PLANE=FALSE:PLANEX=0:ENDPR
OC
1470PRINTTAB(PLANEX-1,PLANEY);"  "
1480SOUND 0,-15,2,1
1490PRINTTAB(PLANEX,PLANEY);CHR$231;CHR
$232
1500ENDPROC
1510*********************************
1520DEF PROCcentre(S$,YY)
1530XX=(20-LEN(S$))/2
1540PRINTTAB(XX,YY);S$
1550ENDPROC
1560*********************************
1570DEF PROCtree
1580CLS
1590VDU 4
1600COLOUR 2
1610PROCcentre("You hit a tree!!",4)
1620COLOUR 3
1630PROCcentre("You're balloon is",6)
1640PROCcentre("very tangled'!",8)
1650COLOUR 5
1660PROCcentre("Another Game ?",12)
1670*FX15
1680A$=GET$
1690IF A$="Y" THEN CLS:GOTO 120
1700VDU 7:CLS:PRINT"Bye!":END
1710ENDPROC
1720*********************************
1730DEF PROCplane
1740VDU4:PRINTTAB(PLANEX,PLANEY);"   "
1750YY=Y
1760REPEAT:Y=Y+INC:PROCman("POP!")
1770INC=INC-1:UNTIL Y<200
1780VDU4:COLOUR 1:PRINTTAB(X/64,29);"**
1790A=INKEY(160)
1800PROCcrash
1810ENDPROC
1820*********************************
```



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Sarle	Artic	5.95	4.95
Dimension Destructors	Artic	5.95	4.95
[illegible]	Artic	5.95	4.95
Manic Miner	Bug-Byte	5.95	4.95
Super Chess	CP Software	7.95	6.99
Backgammon	CP Software	5.95	4.99
Bridge Player	CP Software	8.95	7.99
Handicap Golf	CRL	6.95	5.99
Woods of Winter	CRL	6.95	5.99
Rth.	CRL	9.95	8.99
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Magic Meanies	CDS	5.95	4.99
Rommels Revenge	Crystal	6.50	5.50
Hall of the Things	Crystal	7.50	6.00
Invasion Bodysnatchers	Crystal	6.50	5.40
Database	Dialogue	14.95	12.50
Oracles Cave	Doric	7.95	6.00
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Nightflite II	Hewson	5.95	4.95
Heathrow A.T.C	Hewson	7.95	6.95
Hi-Soft Pascal	Hi-Soft	25.00	21.00
Devpac 3	Hi-Soft	14.00	13.00
Jumping Jack	Imagine	5.50	4.50
Arcadia	Imagine	5.50	4.50
Zip Zap	Imagine	5.50	4.50
Zzoom	Imagine	5.50	4.50
Schizoids	Imagine	5.50	4.50
Alchemist	Imagine	5.50	4.50
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Snowball	Level 9	9.90	8.90
Harrier [illegible]	Martech	5.50	4.50
Jungle Trouble	Martech	5.50	4.50
The Hobbit	Melbourne House	14.95	12.95
Melbourne Draw	Melbourne House	8.95	7.99
Mad Martha II	Mikrogen	6.95	5.95
Haunted Hedges	Micromega	6.95	5.99
Death Chase	Micromega	6.95	5.95
Star Clash	Micromega	6.95	5.99
Luna Crabs	Micromega	6.95	5.99
Strike Force	Micromart	6.95	5.95
Sabre of Isalan	Microgame	5.95	4.99
Use & Learn	Micrnl	6.95	5.99
[illegible]	Microsphere	6.95	5.99
Omnicalc	Microsphere	9.95	8.95
Knot in 3D	New Generation	5.95	4.99
Corridors of Genon	New Generation	5.95	4.90
3D Tunnel	New Generation	5.95	4.99
Kong	Ocean	5.90	4.95
Mr Wimpy	Ocean	6.90	5.90
Editor Assembler	Picturesque	8.50	7.50
Spectrum Monitor	Picturesque	7.50	6.50
Hunter Killer	Protek	7.95	6.95
Airliner	Proteus	6.95	4.99
[illegible]	Psion	7.95	6.95
Scrabble	Psion	14.95	12.95
Horace Goes Skiing	Psion	5.95	4.95
Hungry Horace	Psion	5.95	4.95
Horace and the Spiders	Psion	5.95	4.99
Gridrunner	Quicksilva	6.95	5.95
3D Ant Attack	Quicksilva	6.95	5.95
Bugaboo	Quicksilva	6.95	5.95
Aquaplane	Quicksilva	6.95	5.90
Xadom	Quicksilva	6.95	5.95
Timegate	Quicksilva	6.95	5.95
Games Designer	Quicksilva	14.95	13.00
Apocalypse	Red Shift	9.95	8.95
Invincible Island	Richard Shepherd	6.50	5.50
Transylvanian Tower	Richard Shepherd	6.50	5.50
[illegible]	Softek	5.95	4.99
Trans Am	Ultimate	5.50	4.50
Cookie	Ultimate	5.50	4.50
Pssst	Ultimate	5.50	4.50
Jetpac	Ultimate	5.50	4.50
Atic Atac	Ultimate	5.50	4.50
Lunar Jetman	Ultimate	5.50	4.50
Android II	Vortex	5.95	4.99
VIC20			
Dark Dungeons	Anirog	5.95	4.95
Star Defence	Anirog	7.95	6.95
[illegible] Galaxy	Anirog	7.95	7.00
Battlefield	Anirog	5.95	4.95
Arcadia	Imagine	5.50	4.50
Bewitched	Imagine	5.50	4.50
Catcha Snatcha	Imagine	5.50	4.50
Wacky Waiters	Imagine	5.50	4.50
Falcon Fighters	Interceptor	6.00	5.00
Crazy Kong	Interceptor	6.00	5.00
Laser Zone	Llamasoft	6.00	5.00
Gridrunner	Llamasoft	6.00	5.00
Matrix	Llamasoft	6.00	5.00
Metagalactic Llamas Battle	Llamasoft	6.00	5.00
[illegible]	MMS	[illegible]	[illegible]
[illegible]	Martech	7.95	6.99
[illegible]	Quicksilva	5.95	4.99
Skyhawk	Quicksilva	7.95	6.99
Jet Pac	Ultimate	5.50	4.99
BBC			
The Hobbit	Melbourne House	14.95	13.00
Cylon Attack	A&F Software	7.95	6.90
Chuckie Egg	A&F Software	7.90	6.90
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[illegible] Art	Quicksilva	14.95	12.95
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[illegible]	Sulis Software	9.95	8.95
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Bat Attack	Alligata	7.95	6.95
[illegible]	Alligata	7.95	6.90
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H-Expert	Anirog	7.95	6.95
Moon Buggy	Anirog	7.95	6.95
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3D Time Trek	Anirog	7.95	6.95
[illegible]	Anirog	5.95	4.95
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[illegible]	[illegible]	5.00	4.00
Kick Off	Bubble Bus	6.99	5.99
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DFM Database	Dialogue	24.00	22.00
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Fabulous Wanda	Games Machine	7.95	6.95
[illegible]	Interceptor	7.00	6.00
Frogger	Interceptor	7.00	6.00
Spriteman	Interceptor	7.00	6.00
Crazy Kong 64	Interceptor	7.00	6.00
Scramble	Interceptor	7.00	6.00
Panic	Interceptor	7.00	6.00
Cuddly Q-Bert	Interceptor	7.00	6.00
Defender 64	Interceptor	7.00	6.00
Siren City	Interceptor	7.00	6.00
Tokens of Ghall	Interceptor	7.00	6.00
Assembler 64	Interceptor	7.00	6.00
Vortex Raiders	Interceptor	7.00	6.00
Arcadia 64	Imagine	5.50	4.50
[illegible]	Llamasoft	7.50	6.50
Laser Zone	Llamasoft	7.50	6.50
Hover Bovver	Llamasoft	7.50	6.50
Mutant Camels	Llamasoft	7.50	6.50
Gridrunner	Llamasoft	5.00	4.00
Hungry Horace	Melbourne House	5.95	4.95
Hobbit 64	Melbourne House	14.95	12.95
Armageddon 64	Ocean	6.95	5.90
[illegible]	Ocean	6.90	5.95
Aquaplane	Quicksilva	7.95	6.95
Purple Turtles	Quicksilva	7.95	6.95
Ring of Power	Quicksilva	9.95	8.95
Ultisynth	Quicksilva	14.95	13.95
[illegible]	Softek	7.95	6.95
Ugh	Softek	7.95	6.95

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Softly, softly approach

***David Kelly** talks to Gail Wellington of Commodore UK*

Commoddre used to ignore software We gave it lip service and we talked about doing our own but for a long time we never managed to get our act together, says Gail Wellington

Even in the early days of the Vic we didn t have a real commitment to program development

Then eighteen months ago, when we knew the Vic was a success and that the Commodore 64 was soon to arrive the company decided to go ahead with an ambitious software publishing plan

"If the 64 was to be a small business machine as well as a home computer then we recognised we would have to be the aggresaor to get the kind of software we wanted Secondly we reckoned there might be money in it Maybe that should be number one!

Having made the decision to attack the software market Gail Wellington was chosen as software manager

Gail came to work for Commbdore by a somewhat circuitous route "I trained as a mechanical engineer at Boston and then I did things like get married have children get divorced and go back to work

I worked first as chief engineer for a company that manufactured commercial dish washing equipment and then as a technical author

To cut a long story short I was going to travel and I came to the UK four years ago. Then my daughter decided to go to school here so suddenly I wasn t travelling any more

50-50 chance

When I saw a sign in a shop window for a computer technical author I didn t know it was Commodore I reckoned I had about a 50 50 chance of getting it — if it was all to do with hardware I reckoned I didn t know enough about electronics

Gail got the job As a technical author for Commodore the first thing she had to do was write a manual about writing manuals "Then I wrote a couple of manuals to prove the first one worked!

They were looking for someone to head up the new UK software division and I proposed a reorganisation They said Fine — now do it In April 1982, Gail became software manager and 18 months later her department employs 16 staff "I may have an American accent but I am very much part of the UK software scene

By June 1982 Gail was selling the concept of writing software for the 64 to software houses

' When I started off with the 64 I made a shopping list of the software I wanted

'We had to position the 64 in the market so that the Vic was still a viable computer — we wanted to continue to sell them both The idea was to use software as the tool to put the 64 in the position we wanted it It would have been quite possible to have put the 64 somewhere else in the market — we could have made it a games machine

' Certainly if we had not positively encouraged the writing of non games software then it would have become a games machine by default

' We knew we wanted *Introduction to Basic* and we acquired a wordprocessor — *Easy Script* — from Precision Software Some of the other standard things — database and spreadsheet programs were being done elsewhere in the world

The emphasis in the US is very much on arcade games on cartridge and the market for cassette software is practically non-existent Commodore has an agreement with arcade game company Bally Midway to convert titles from the arcades to the Vic and 64 So far this arrangement has produced *Gorf* and *Lazarian*, soon to be followed by *Wizard of Wor* and *Blue Print* "With luck we ll also see *Satan's Hollow* — it's a bit tricky there are so many sprites in that one."



British software authors have an enviable reputation for writing non-arcade software Gail commissioned for the 64 *Simon s Basic Introduction to Basic Easy Script Gortek and the Microchips* and most recently the excellent *International Soccer*

New titles include *High Flier* — a business simulation game and a programmer s package *Assembler Tutor*

In January Commodore will announce *Club Manager* a record-keeping program that links to the 64 s word processor software and is capable of generating standard letters *Future Finance* is a menu-driven financial planning package for the small businessman

"I reckon I have now achieved my initial goals for 64 software says Gail But there is so much still to do

We have a vast installed user base on both the Vic and 64 and peoples tastes change All the time we are having to introduce new titles and retire old ones As a fashion industry it fluctuates even more than men s neck-ties

This month Commodore hopes to launch its *Magic Voice* speech module which will sell for around £50 To accompany the hardware Gail has commissioned a number of software titles Two Rom talking book cartridges to help teach reading and writing written by Edata *Magic Garden* and *Magic Toolbox* And the BJ Bear early learning series on cassette or disc *Get Ready to Read* in January and then at monthly intervals *Get Ready for Numbers* and *Get Ready to Think* all aimed at 3-6 year olds Two other BJ Bear series will follow — three *Start to* titles for 7 9 year olds Each package will include a story/activity book and a parent/teacher manual, all for under £15

' We are also working with ASK to develop a range of Rom based education games that combine an arcade game with some learning that will be previewed at the CES show in January

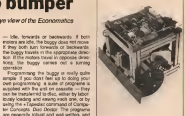
Other new Commodore titles include *Plan Kit* critical path analysis and *Easy Stock* stock control, both for the 64

Gail will also place more emphasis on disc software with future releases In North America 60 percent of 64 owners have disc drives In the UK the number is considerably less but growing fast

Software put out by Commodore UK is submitted to Commodore either as a finished product or as an idea or is actually commissioned by Gail *International Soccer* is one example of the latter approach Gail specifically asked for it to be written by Andy Spencer — despite the fact he wasn t particularly interested in football Andy is now working on the follow up *Basketball* which should be out by Easter When he said it was even better I didn t believe him — but it is!" ■

Bumper to bumper

***Jeremy Ruston** takes a user's eye view of the Economatics buggy for the BBC model B*



Most people who have seen my BBC buggy have muttered something about expensive toys In fact, the buggy is a lot more than that

Physically, it is a sturdy cube made of aluminium Fischer Technick with two wheels and a castor on the bottom and a circuit board on the top You can also fit two bumper detectors a light dependent resistor and a bar code reader to the front of the frame, although the buggy operates perfectly without them

The buggy is connected via a technicolour 20-way cable to a small circuit board which buffers the signals coming out of the BBC micro The circuit board plugs into the user port, controlling the motors and reading the bumpers, into the analogue port, reading the analogue sensors, and into the auxiliary power outlet to power the whole thing If your auxiliary power outlet is being used to run a disc drive an alternative unit can be purchased A pen cradle is available as an option, which allows the buggy to leave a trail

Each motor can be in one of three states — idle, forwards or backwards If both motors are idle, the buggy does not move If they both turn forwards or backwards the buggy travels in the appropriate direction If the motors travel in opposite directions the buggy carries out a turning operation

Programming the buggy is really quite simple If you don't feel up to doing your own programming a suite of programs is supplied with the unit on cassette — they can be transferred to disc, either by laboriously loading and saving each one, or by using the *Tapedisc* command of Computer Concepts *Disc Doctor* The programs are generally robust and well written, and should be suitable for classroom use

Having got the wonderful buggy, what is it used for? Well, some people have used it for obscure industrial applications (I heard one group was investigating the possibility of using it to lay cables) However at £189 including VAT, its main body of users will be in schools Those who saw the *Horizon* program about turtle graphics and logo will be able to visualise many of the ways it will be used in schools However there is not, currently, a version of logo which interfaces with the buggy

But a child will not need logo to grasp the spatial relationships of angles and polygons which is the kind of application I see the buggy being used for The beauty of the system is that once the five year olds have finished playing with it it can become a tool for the older children to learn mechanics For example using extra Fischer-Technick parts it is easy to extend the operations of the buggy by adding extra limbs and experimenting with methods of driving the wheels (should you use a chain cogs or direct drive?)

So the product is nice, well supported in software, user-extensible, useful and fun But, it is expensive I doubt whether the government will share the cost of buying a buggy for schools which will almost certainly limit the number available to any given school Thus I am afraid, that the buggy will become scarce This will be catastrophic, since one or two buggies between a class of 20 or 30 are not going to do much good

The final point is that the buggy is supplied as a kit (from Economatics 4 Orgreave Crescent, Dane House Industrial Estate Handsworth, Sheffield) The electronic parts are fully assembled but the mechanical parts need to be assembled from scratch

When I built my buggy I was amazed at how lax the instructions were Whenever the instructions became unclear I just used common sense to elaborate on them Luckily I was correct most of the time but I couldn't help feeling that someone in a similar position who did not have the advantage of having played with an assembled buggy before could have some problems ■


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Full speed ahead

***Keith and Steven Brain** demonstrate how machine code routines on the Aquarius can speed up animation*

In *PCW* Vol 2 issue 45 we explained how to use machine code on the Aquarius and gave examples of some simple useful routines. We will now expand on the use of machine code subroutines by showing you how to use them to speed up animation in your Basic programs.

The following machine code routine instantly draws and erases a particular design on the screen. Of course if you can keep drawing and erasing the design you can easily move it. If you try to move more than a couple of characters at a time using Basic then you can actually see the whole thing being built up and broken down quite slowly.

On the other hand this routine fills all the points in a design virtually instantaneously and is much more impressive. The routine is laid out in detail in the table but to load it you just need to enter the following Basic lines and Run.

```
10 PRINT CHR$(11)
20 DATA 33 0 0 17 0 0,25,229 17 0 0,25,15 190
  183 62 0
30 DATA 254 0 40 2 24 4 62,0 24 1 20
  2,124,46 1 149 209 19 193
40 DATA 229 26 30 0 111 0 229 193 225 19,24 223
70 FOR N=16000 TO 16491 READ A POKE N
  A NEXT N
80 POKE 14340 176 POKE 14341 62
```

Using a data table

This routine is rather different to the *Fill* routine described earlier. Instead of loading the same character into a large area you specify a very detailed design in a table as pairs of numbers defining the character required and the offset from the last character.

Data Table Format

1	2	3	4
1st CHR	1st offset	2nd CHR	2nd offset etc

These are loaded from a Data statement as for the main routine. As a very simple example we will consider a small lunar lander made up of seven characters. The top row contains only the nosecone *(CHR$(143))* the second character (192) is 39 bytes further on as it is one line below and one column to the left etc.

Character codes for lunar lander

```
    143
192 243 193
202 212 218
```

The only other thing is that the first byte in the table must state the total number of characters to be placed (7 in this case).

```
60 DATA 7 143 39 192 1,243 1 193 38,20
  2,1 212 1,218
```

Control values

A number of locations are used to store control values. We indicate where the picture is to be placed by means of *Screen Start (16001/2)* and *Screen Offset (16004 5)* values, and we also need to state where in memory the appropriate data table will be found as *Data Start (16009/16010)*.

If location 16016 contains 1 then the characters from the table will be loaded to the screen but if it contains 0 then the number in location 16024 will be loaded into the same positions, using only the offset values. As location 16024 currently contains 32 then this will fill the positions with spaces (ie, selectively erase).

```
90 POKE 1600 40
100 POKE 16010 62
110 POKE 16002 40
120 POKE 16016 1
130 POKE 16004 20
140 POKE 16005 0
150 POKE 16009 176
160 Z=USR(Z)
```

If you Run this as it stands then the ship will appear in the centre at the top of the screen. To erase it all you need to do is alter the contents of location 16016 to 0.

```
170 A$=INKEY$ IF A$="" THEN 170
180 POKE 16016 0
190 Z=USR(Z)
200 A$=INKEY$ IF A$"" THEN 200
210 GOTO 170
```

Now each time you press a key the ship will appear or disappear.

Making a move

Of course we need to get the ship under cursor control, which we will do with Basic as usual. Notice that you only need to *Poke* values which are changing but that things are a little complicated as we need to change both addresses 16004 and 16005 to move over the whole screen. Also note that the program is arranged so that the ship is not erased until after you have pressed a key.

```
1000 YP=20
1010 POKE 16016 1
1020 POKE 16004 Y
1030 POKE 16005 Y1
1040 Z=USR(Z)
1050 IF PEEK(14351)<>6 THEN 1050
1060 K=PEEK(14346)
1070 YU=(K=59)-(K=58)+40*(K-113)-40*
  (K=97)
1080 IF YP+YU<41 OR YP+YU>920 THEN 101
0
1090 Y=YP-256*INT(YP/256)
1100 Y1=INT(YP/256)
1110 POKE 16016 0
1120 Z=USR(Z) GOTO 1010
```

Setting up different colours

As well as loading characters from location 12328 onwards we can specify the colour of each character individually by also using the same routine to load into the colour Ram area. The Data table is built up in the same way as before but with colour codes in place of character codes. The *For Next* loop will have to be extended to read in the extra data.

```
64 DATA 7 84 38 70 1 67 1 70 38 0 1 62
  1 6
70 FOR N=16000 TO 16875 READ A POKE N,
A NEXT N
```

We will need to switch the destination *(Screen Start)* and source *(Data Start)* addresses backwards and forwards and to make the action as fast as possible we need the minimum number of *Pokes*. So the sequence should be

```
DRAW CHARACTER
COLOUR CHARACTER
RESET COLOUR
BLANK CHARACTER
```

```
170 POKE 16002 52
180 POKE 16009 194
190 Z=USR(Z)
200 POKE 16016 0
210 POKE 16024 6
220 Z=USR(Z)
230 POKE 16002,48
240 POKE 16024 32
250 POKE 16009 176
260 Z=USR(Z)
```

Notice that the value 6 is *Poked* into location 16024 when the *Screen Start* points to the colour Ram to reset the default foreground/background colours.

We leave you to experiment further with these routines but remember that the bigger the design the more speed advantage you gain over Basic. ■



```
AQUARIUS AHIMATION ROUTINE
address value mnemonic
16000   33    LD NL,HH               16025   24    JR
16001         LOW BYTE SCREEH START  16026   1
16002         HIGN BYTE SCREEH START 16027   26    LD A.(DE)
16003   17    LD DE,NN               16028   2     LD (BC),A
16004         LOW BYTE SCREEH OFFSET 16029   124   LD A.H
16005         NIGN BYTE SCREEH OFFSET 16030  46    LD L,n
16006   25    ADD HL,DE              16031   1
16007   229   PUSH NL                16032   149   SUB L
16008   17    LD DE,NH               16033   200   RET 2
16009         LOW BYTE DATA START    16034   19    INC DE
16010         NIGH BYTE DATA START   16035   103   LD H.A
16011   26    LD A.(DE)              16036   229   PUSN HL
16012   19    INC DE                 16037   26    LD A.(DE)
16013   193   POP 0C                 16030   38    LD N,n
16014   103   LD H,A                 16039   0
16015   62    LD A.N                 16040   111   LD L,A
16016         DRAW/ERASE (1/0)       16041   9     ADD HL,0C
16017   254   CP                     16042   229   PUSN NL
16010   0                            16043   193   POP 0C
16019   40    JR,Z                   16044   225   POP NL
16020   2                            16045   19    IHC DE
16021   24    JR                     16046   24    JR
16022   4                            16047   223
16023   62    LD A,H
16024         ERASE CODE             (16048    DATA START)
```

Along the border

***Trevor Tome** converts the colour, attributes and border routines to machine code in part five of his series*

So far, we've covered the normal printing aspects of the display, but this week I'm going to look at colour, attributes, the border and, if I can squeeze it in, routines to simulate *Screen$(y,x)* and *Point(x,y)*.

Firstly colour and attributes. The most convenient method of handling these items is to use the *Rst 10h* feature of the Rom to generate the appropriate cohditions. Appendix A of the Spectrum handbook gives a list of the codes needed to alter ink, paper, or any of the attributes. Here's an example:

```
10 PRINT AT 10,0 INK 2 OVER 1 "Hello!"
```

Our machine code equivalent would become

```
LD    HL,PSTRING          ;list to be printed
CALL  PRINTSSTRING        ;see last week


PSTRING
 DEFB 15                  ;length of following data
 DEFB 22                  ;AT
 DEFB 10                  ;row 10
 DEFB 0                   ;column 0
 DEFB 16                  ;INK
 DEFB 2                   ; 2
 DEFB 21                  ;OVER
 DEFB 1                   ; 1
 DEFM Hello!              ;the text
```

As you can see, apart from the slog of converting the Basic commands into codes, it's almost as easy to write in machine code, and it's certainly a lot faster.

However, this method does have one drawback — all the colour and attribute settings are temporary. They will not apply to *Plot* or *Draw* routines. The solution to this problem is to use a Rom routine at address *1Cadh*. This handy little routine (which I refer to as *Xperm*) takes the current temporary attributes and copies them into the permanent settings. So, if this routine included an extra line

```
LD   HL,PSTRING
CALL PRINTSSTRING
CALL XPERM
```

then the permanent values of *Ink 2, Over 1* would be established.

Of course, there will be occasions when you want to reset all the temporary values back to the permanent settings. This is accomplished by a routine (called *Xrtemp*) at address *0D4Dh*.

There are times when you can see something that would be extremely desirable in Basic — one of them is the ability to alter the colour of ink and/or paper without affecting the display, or even to alter the flashing and bright settings. If such a Basic command existed, I feel it should be called *Wash* so that you would write *10 Wash Ink 2* which would instantly alter all ink on the screen to colour 2 (red).

Listing 1 gives just such a routine. You enter it with two parameters — register *B* contains the attribute byte values to be placed in each location of the screen, while register *C* should hold a mask which indicates the attributes to be altered. The bit pattern layout of registers *B* and *C* is:

```
7      0
FBPPPIII  where F is the flashing status
          B is the brightness status
          PPP is the paper colour
          III is the ink colour
```

For example

```
LD   B,82h
LD   C,87h
CALL WASH
```

would turn all ink on the screen to red (2) and every square would be flashing. The mask value in register *C* should have a "1" bit set on in each position of the appropriate attribute to be altered. So, to alter the paper attribute only, register *C* would hold *Bin 00111000* or decimal 56. Register *B* then holds the new paper colour in bits 3-5.

The border colour is quite easy to alter. Although a simple *Out* instruction is sufficient to do the job, a Rom routine at address *229Bh (Xborder)* will additionally update the system variables in case you use further Rom features. This routine merely requires the new border colour in register *A*, eg

```
XBORDER EQU  229Bh
        LD   A,2
        CALL XBORDER        ;turn border red
```

There are one or two more useful Rom routines before I move on — *Xcls* is a routine at address *0D6Bh* which will clear the screen, provided stream 2 has been opened in advance. Also, screen scrolling can be performed in two ways. First, the entire screen can be scrolled by calling routine *Xscroll* at address *0DIeh* while the lower *n* lines of the display can be scrolled by setting register *B* to hold *23-n* then calling routine *Xpscroll* at address *0E00h*.

I trust that I've not rushed too much in order to squeeze in Listing 2 — this listing gives two subroutines that you can use. The first simulates the *Screen$(y,x)* function. You set register pair *Hl* to hold the row number and *De* to hold the column number. On return, registers *Hl* (although *H* will always hold zero) contain the code number of the character on the screen. As with the standard *Screen$* function, unrecognised characters reply with the value zero, but you can always set *Chars* to point to your own character set before you enter the routine.

Devotees of the Rom will notice that this code is almost exactly the same as a chunk of code at address *2538h*. The reason that the Rom cannot be used is that this section of code places its result on the internal floating point calculator stack rather than in registers, and no easy entry can be made which gives a suitable return to your machine code.

The second routine gives the equivalent of *Point(x,y)* and here registers *Hl* hold the *x*-co-ordinate, while *De* hold the *y*-co-ordinate. On return, register *L* holds 0 or 1 indicating that the position contains paper or ink respectively, while register *H* is always set to zero.

This ends our look at screen features. Next week I'll turn to the keyboard and show how you can reproduce the *Input* command from machine code. ■

By Trevor Toms, author of The Spectrum Pocket Book published by Phipps Associates.

Listing 1

```
Addr Hex      Op    Operands

F900          CHARS:
F900           EQU  SC36H
F900          XGSPOS:
F900           EQU  22AAH
F900          SCREEN$:
F900 43        LD   B,E
F901 4D        LD   C,L
F902 2A365C    LD   HL,(CHARS)
F905 24        INC  H
F906 79        LD   A,C
F907 0F        RRCA
F908 0F        RRCA
F909 0F        RRCA
F90A E6E0      AND  0E0H
F90C A8        XOR  B
F90D 5F        LD   E,A
F90E 79        LD   A,C
F90F E618      AND  18H
F911 EE40      XOR  40H
F913 57        LD   D,A
F914 0660      LD   B,96
F916          SCRB:
```

```
F916 C5         PUSH BC
F917 D5         PUSH DE
F918 E5         PUSH HL
F919 1A         LD   A,(DE)
F91A AE         XOR  (HL)
F91B*2800       JR   Z,SCRM
F91D 3C         INC  A
F91E*2000       JR   NZ,SCRN
F920 3D         DEC  A
F921           SCRM:
F921 4F         LD   C,A
F922 0607       LD   B,7
F924           SCRR:
F924 14         INC  D
F925 23         INC  HL
F926 1A         LD   A,(DE)
F927 AE         XOR  (HL)
F928 A9         XOR  C
F929*2000       JR   NZ,SCRN
F92B 10F7       DJNZ SCRR
F92D C1         POP  BC
F92E C1         FOF  BC
F92F C1         POP  BC
F930 3E80       LD   A,80H
F932 90         SUB  B
F933           SCRX:
F933 6F         LD   L,A
F934 2600       LD   H,0
F936 C9         RET
F937           SCRN:
F937 E1       \ POP  HL
F938 110800     LD   DE,8
F93B 19         ADD  HL,DE
F93C D1         FOP  DE
F93D C1         POP  BC
F93E 10D6       DJNZ SCRB
F940 AF         XOR  A
F941 18F0       JR   SCRX
F943           POINT:
F943 43         LD   B,E
F944 4D         LD   C,L
F945 CDAA22     CALL XGSPOS
F948 47         LD   B,A
F949 04         INC  B
F94A 7E         LD   A,(HL)
F94B           PLOOP:
F94B 07         RLCA
F94C 10FD       DJNZ PLOOP
F94E E601       AND  1
F950 6F         LD   L,A
F951 2600       LD   H,0
F953 C9         RET
F954           ATTR:
F954 7D         LD   A,L
F955 0F         RRCA
F956 0F         RRCA
F957 0F         RRCA
F958 4F         LD   C,A
F959 E6E0       AND  0E0H
F95B AB         XOR  E
F95C 6F         LD   L,A
F95D 79         LD   A,C
F95E E603       AND  3
F960 EE58       XOR  58H
F962 67         LD   H,A
F963 6E         LD   L,(HL)
F964 2600       LD   H,0
F966 C9         RET

Symbols:
CHARS  5C36     XGSPOS 22AA
SCREEN F900     SCRB   F916
SCRM   F921     SCRR   F924
SCRX   F933     SCRN   F937
PDINT  F943     PLOOP  F94B
ATTR   F954
No error(s)
```

Listing 2

```
Addr Hex        Op   Operands

FA60           AFILE:
FA60            EQU  5800H
FA60           WASH:
FA60 210058     LD   HL,AFILE
FA63 110003     LD   DE,768
FA66 79         LD   A,C
FA67 2F         CPL
FA68 4F         LD   C,A
FA69           WASH8:
FA69 7E         LD   A,(HL)
FA6A A1         AND  C
FA6B B0         OR   B
FA6C 77         LD   (HL),A
FA6D 23         INC  HL
FA6E 1B         DEC  DE
FA6F 7B         LD   A,E
FA70 B2         OR   D
FA71 20F6       JR   NZ,WASH8
FA73 C9         RET

Symbols:
AFILE  5800     WASH   FA60
WASH8  FA69
No error(s)
```

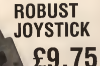
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Welcome

A race for time

***Michael Blackburn** presents* Formula 2 *– a racing car game against the clock*

This is a program for the Dragon 32, using hi-res graphics, colour sound, and auto-repeat for fast movement

The race is on! You have beaten all your opponents, but now you have to race the clock. You have a choice of tracks and from then on it's up to you Track 1 is the easiest, but track 2 is the more challenging. Good luck and good racing

Once the track is shown on the screen, nothing will happen until a key is pressed Once a key is pressed your car will appear, your *time* will start and if you stop, there is a warning 'sound' which slows you down even further Please try to remember to go the right way round — clockwise!

If you wish, you may incorporate a third or fourth track of your own design This is made simple because the *main* routing caters for all tracks, as long as the colours are not altered as this is how the position of the car is checked

Note before saving the program it is a good idea to press the reset button in case the processor is in fast mode which disables the cassette port

Variables

T = Time
MS = Fastest time
c = ARRAY for crashed cars
LA = Laps completed
CR = Number of mistakes
L = Length of race
Q = Choice of track
X and Y – Position of car
R – Radius of corner

10-180	Instructions
190-350	Choice of track/laps etc
360-720	Draws track one
730-1140	Draws track two
1150-1330	MAIN ROUTINE Checks keyboard line position of car
1340 1410	Crash routine
1420 1520	Finishing routine
1530 1820	High score/Author Go routine

```
LIST
   10CLS
   20PRINT@75,"FORMULA2"
   30PRINT@107,"========"
   40PRINT@161,"DRIVE YOUR CAR AROUND THE
      CIRCUIT.
   50PRINT:PRINT"TRY TO AVOID THE KERB (RE
D)     AND STAY ON THE TRACK (YELLOW)."
   60 PRINT@460,"any key"
   70 FOR N=1 TO 2000
   80 IF INKEY$ ="" THEN 100
   90 NEXT N
  100 CLS
  110 PRINT@38,"MORE THAN ONE KEY MAY
       BE PRESSED AT ONCE"
  120 PRINT@198,"arrow....movement"
  130 PRINT@262,"key 1.....first gear"
  140 PRINT@326,"key 2.....second gear"
  150 PRINT@461,"any key"
  160 FOR N=1 TO 2000
  170 IF INKEY$ ="" THEN 190
  180 NEXT N
  190 T=0:HS=500
  200 PMODE 1,1:PCLS
  210 DIM C(5,5)
  220 DRAW"BM1,4;E3;F3;G3;H3;R2;D2;L2;U1"
  230 GET(0,0)-(5,5),C,G
  240 POKE &HFFD6,0
  250 LA=0:CR=0:L=0
  260 CLS
  270 PRINT@67,"HOW MANY LAPS""
  280 INPUT L
  290 IF L<1 THEN 280
  300 PRINT@131,"WHICH TRACK (1/2)?"
  310 INPUT Q
  320 IF Q>2 OR Q<1 THEN 310
  330 CLS
  340 PRINT@234,"PLEASE WAIT"
  350 ON Q GOTO 360,730
  360 X=75:Y=20
  370 PMODE 1,1:PCLS
  380 FOR R=25 TO 40 STEP 15
  390 CIRCLE(50,50),R,4,1,.5,.75
  400 NEXT R
  410 FOR R=15 TO 30 STEP 15
  420 CIRCLE(190,40),R,4,1,.75,.25
  430 NEXT R
  440 FOR R=25 TO 40 STEP 15
  450 CIRCLE(90,95),R,4,1,.25,.75
  460 NEXT R
  470 FOR R=5 TO 20 STEP 15
  480 CIRCLE(120,115),R,4,1,0,.25
  490 NEXT R
  500 FOR R=5 TO 20 STEP 15
  510 CIRCLE(145,113),R,4,1,.5,.75
  520 NEXT R
  530 FOR R=30 TO 45  STEP 15
  540 CIRCLE(200,136),R,4,1,.75,0
  550 NEXT R
  560 FOR R=15 TO 30 STEP 15
  570 CIRCLE(215,148),R,4,1,0,.25
  580 NEXT R
  590 FOR R=40 TO 55 STEP 15
  600 CIRCLE(65,123),R,4,1,.25,.5
  610 NEXT R
  620 DRAW"BM50,11;R140;BD15;L140"
  630 DRAW"BM190,55;L100;BD15;R100"
  640 DRAW"BM90,118;R30;BD16;L30"
  650 DRAW"BM145,92;R55;BD15;L55"
  660 DRAW"BM230,138;D10;BR15;U10"
  670 DRAW"BM215,162;L150;BD15;R150"
  680 DRAW"BM25,123;U73;BL15;D73"
  690 PAINT(70,20),2,4
  700 PAINT(50,50),1,4
  710 DRAW"C3;BM70,11;D15;R1;U15
  720 GOTO 1150
  730 X=75:Y=15
  740 PMODE 1,1:PCLS
  750 FOR R=15 TO 25 STEP 10
  760 CIRCLE(30,35),R,4,1,.5,.75
  770 NEXT R
  780 FOR R=20 TO 30 STEP 10
  790 CIRCLE(170,40),R,4,1,.75
  800 NEXT R
  810 FOR R=50 TO 60 STEP 10
  820 CIRCLE(250,50),R,4,1,.375,.5
  830 NEXT R
  840 FOR R=40 TO 50 STEP 10
  850 CIRCLE(205,140),R,4,1,.875,.5
  860 NEXT R
  870 FOR R=15 TO 25 STEP 10
  880 CIRCLE(140,60),R,4,1,.75
  890 NEXT R
  900 FOR R=5 TO 15 STEP 10
  910 CIRCLE(40,50),R,4,1,.275,.75
  920 NEXT R
  930 FOR R=15 TO 25 STEP 10
  940 CIRCLE(90,137),R,4,1,.875,.125
  950 NEXT R
  960 FOR R=25 TO 35 STEP 10
  970 CIRCLE(40,152),R,4,1,.25,.5
  980 NEXT R
  990 DRAW"BM33,10;R138;BU10;L138"
 1000 DRAW"BM190,40;D10;BR10;U10"
 1010 DRAW"BM217,85;F20
 1020 LINE(210,92)-(250,112),PSET
 1030 DRAW"BM165,140;U80;BL10;D80
 1040 DRAW"BM140,47;L100;BU10;R100
```

```
1050 DRAW"BM40,55;F65;WG7;H68'
1060 LINE(98,147)-(68,177),PSET
1070 LINE(107,150)-(70,187),PSET
1080 LINE(68,177)-(40,177),PSET
1090 LINE(68,187)-(40,187),PSET
1100 DRAW"BM6,152;U117;BR10;D117"
1110 DRAW"BM70,12;C3;D7
1120 PAINT(70,15),2,4
1130 PAINT(60,160),1,4
1140 DRAW"BM70,12;C3;D7"
1150 SCREEN 1,0
1160 IF INKEY$="" THEN 1160
1170 TIMER=0
1180 REM MAIN ROUTINE
1190 PSET(X,Y,0)
1200 IF PEEK(341)=223 THEN PSET(X,Y,2):Y=
Y-2
1210 IF PEEK(342)=223 THEN PSET(X,Y,2):Y=
Y+2
1220 IF PEEK(343)=223 THEN PSET(X,Y,2):X=
X-2
1230 IF PEEK(344)=223 THEN PSET(X,Y,2):X=
X+2
1240 IF PEEK(339)=254 THEN POKE &HFFD6,0
1250 IF PEEK(340)=254 THEN POKE &HFFD7,0
1260 IF Q=1 THEN  DRAW"C3;BM70,11;D15"
1270 IF Q=2 THEN DRAW"C3;BM70,10;D10"  ..
1280 IF PPOINT(X,Y)=1 THEN T=TIMER:PUT(X-2
,Y-2)-(X+3,Y+3),C,PSET:FOR I=1 TO 1000:NEXT
I:GOTO 1340
1290 IF PPOINT(X,Y)=4 THEN SOUND 10,2:CR=C
R+1
1300 IF PPOINT(X,Y)=3 THEN LA=LA+1:SOUND 1
00,1
1310 IF LA=L THEN T=TIMER:GOTO 1420
1320 POKE 337,191
1330 GOTO 1180
1340 CLS
1350 PRINT@73,"YOU CRASHED!!"
1360 PRINT@133,"YOU LASTED";T/50;"SECONDS"
1370 PRINT@200,"YOU HIT";CR;"KERBS"
1380 PRINT@261,"YOU COMPLETED";LA;"LAPS"
1390 PRINT@428,"any key"
1400 IF INKEY$="" THEN 1400
1410 IF INKEY$="" THEN 1410 ELSE 1530
1420 CLS
1430 PRINT@74,"WELL DONE!!"
1440 PRINT@133,"YOU COMPLETED";LA;"LAPS"
1450 PRINT@197,"IT TOOK YOU";T/50;"SECOND
S"
1460 PRINT@259,"YOU HIT THE KERB";CR;"TIME
S"
1470 PRINT@325,"AVERAGE LAP TIME:";(T/50)/
LA
1480 PRINT@428,"any key"
1490 IF INKEY$="" THEN 1490
1500 IF INKEY$="" THEN 1500 ELSE 1530
1510 FOR N=1 TO 1000
1520 NEXT N
1530 CLS
1540 T=T/50
1550 IF LA<1 THEN 1590
1560 T=T/LA
1570 IF T<HS THEN HS=T
1580 PRINT@101,"FASTEST TIME: ";HS
1590 PRINT@230,"ANOTHER GO(Y/N)?"
1600 IF INKEY$="Y" THEN 240
1610 IF INKEY$="N" THEN END
1620 GOTO 1600
```

Beetlemania

Barrie Heptonstall *presents* Beetle Drive *for the BBC A or B*

This is a computer version of the popular game *Beetle Drive*. You and the computer take it in turns to throw the dice — each score giving you another part of the beetle. The scores are as follows

1 for each eye
2 for each feeler
3 for each leg
4 for the tail
5 for the head
6 for the body

This version of the game is written for a model B. To convert it to a model A, change line 70 to mode 4 and leave out the *Gcols* and colour statements

At the end of the game the computer plays the popular Beatles tune *Eleanor Rigby*

Notes

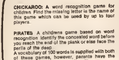
40-60	calls procedures PROCinit and PROCinst
70-80	call PROCmain
90-110	asks if you want to play again
120-180	PROCdice — rolls and draws the dice
190-350	PROCdraw — draws the appropriate part of the beetle
360-380	holds the data for PROCdraw
390-570	PROCinst — displays the instructions
580-640	PROCagain — displays the winner
650-860	PRICinit — sets up the variables and defines CHR$
880-850	PROCcheck — checks if the whole beetle has been drawn
860-1000	PROCmain — calls PROCdice and controls the program
1010-1032	PROCtune — plays the tune

```
>L.
   10REM"BEETLE DRIVE FINAL VERSION 6 "
   20REM"COPYRIGHT BARRIE HEPTONSTALL"
   30REM"20th TO 26th September 1983"
   40MODE7
   50PROCinit
   60PROCinst
   70MODE1
   80PROCmain
   90MODE7
  100PROCagain
  110RUN
  120DEFPROCdice
  130SOUND1,-15,10,3
  140D%=RND(6)
  150COLOUR0:COLOUR131
  160PRINTTAB(T%,5);A$(D%)
  170PROCdraw
  180ENDPROC
  190DEFPROCdraw
  200IFD%=5 ORD%=6 THEN210 ELSEIFX%(1+Y%)=0 ORX%(2+Y%)=0 THEN220 ELSE210
  210ONDX GOSUB230,250,270,290,310,330
  220COLOUR1:COLOUR131:PRINTTAB(V%,3);"NOTHING DRAWN   ":ENDPROC
  230COLOUR128:COLOURW%:IFX%(3+Y%)=0 THENX%(3+Y%)=1:PRINTTAB(6+V%,12);C$ ELSEIFX%(4+Y%)=0 THENX%(4+Y%)=1:PRINTTAB(11+V%,12);C$ ELSERETURN
  240E$="     EYE DRAWN     ":GOTO350
  250IFX%(5+Y%)=0 THENX%(5+Y%)=1:GCOL0,W%:MOVE288+Z%,672:DRAW288+Z%,736:DRAW256+Z%,768 ELSEIFX%(6+Y%)=0 THENX%(6+Y%)=1:GCOL0,W%:MOVEZ%+352,672:DRAW352+Z%,736:DRAWZ%+386,768 ELSERETURN
  260E$="   FEELER DRAWN   ":GOTO350
  270IFR%(Q%)>=35 THENRETURN
  280MOVE(S%(R%(Q%)))+Z%,S%(R%(Q%)+1):DRAW(S%(R%(Q%)+2))+Z%,S%(R%(Q%)+3):DRAW(S%(R%(Q%)+4))+Z%,S%(R%(Q%)+5):R%(Q%)=R%(Q%)+6:E$="     LEG DRAWN     ":GOTO350
  290IFX%(7+Y%)=0 THENX%(7+Y%)=1:GCOL0,W%:MOVE320+Z%,160:DRAW320+Z%,32 ELSERETURN
  300E$="    TAIL DRAWN     ":GOTO350
  310IFX%(1+Y%)=0 THENX%(1+Y%)=1:RESTORE370:GCOL0,W%:MOVE224+Z%,640:FORN%=1 TO8:READE%,F%:DRAWE%+Z%,F%:NEXTN% ELSERETURN
  320E$="     HEAD DRAWN     ":GOTO350
  330IFX%(2+Y%)=0 THENX%(2+Y%)=1:RESTORE380:GCOL0,W%:COLOURW%:MOVE192+Z%,480:FORN%=1 TO10:READE%,F%:DRAWE%+Z%,F%:NEXTN%:COLOUR128:FORN%=1 TO6:READE%,F%:PRINTTAB(E%+V%,F%);CHR$241:NEXTN% ELSERETURN
  340E$="    BODY DRAWN     "
  350COLOUR1:COLOUR131:PRINTTAB(V%,3);E$:PROCcheck:ENDPROC
  360DATA448,448,576,448,608,480,192,448,64,448,32,480,448,352,576,352,608,352,192,352,96,352,32,352,448,256,576,256,608,224,192,256,64,256,32,224
  370DATA256,672,384,672,416,640,416,544,384,512,256,512,224,544,224,640
  380DATA256,512,384,512,448,480,448,256,416,192,384,160,256,160,224,192,192,256,192,480,11,17,7,18,8,20,11,21,7,23,10,25
  390DEFPROCinst
  400FORN%=1 TO2:PRINTTAB(9);CHR$141;CHR$130;"Beetle Drive":NEXTN%
  410PRINT'CHR$129;"    This is a computer version of the"
  420PRINTCHR$129;"popular game 'BEETLE DRIVE'."
  430PRINT'CHR$133;"    You and the computer must take it"
  440PRINTCHR$133;"in turns to roll dice, each throw gives"
  450PRINTCHR$133;"you another part of the beetle."
  460PRINT'TAB(8);CHR$131;"  You need:"
  470PRINT'CHR$134;"      A one for each eye"
  480PRINTCHR$134;"      A two for each feeler"
  490PRINTCHR$134;"      A three for each leg"
  500PRINTCHR$134;"      A four for the tail"
  510PRINTCHR$134;"      A five for the head"
  520PRINTCHR$134;"      A six  for the body"
  530PRINTTAB(0,21);CHR$136;CHR$157;CHR$150;CHR$133;"    PRESS THE SPACE BAR TO PLAY"
  540REPEATUNTILGET=32:CLS
  550PRINTTAB(4,10);CHR$134;"Do you want to start? (Y/N)"
  560G$=GET$:IFG$="Y" THENP%=1 ELSEIFG$="N" THENP%=0 ELSEGOTO560
  570ENDPROC
  580DEFPROCagain
  590IFV%<>0 THENE$="I WIN":V%=10 ELSEE$="YOU WIN,WELL DONE":V%=6
  600PRINT'':FORN%=1 TO2:PRINTTAB(V%);CHR$141;CHR$130;E$:NEXT
  610PRINTTAB(2,10);"Do you want to play again? (Y/N)"
  620PROCtune
  630G$=GET$
  640IFG$="Y" THENRUN ELSEIFG$="N" THENCLS:END ELSEGOTO630
  650DEFPROCinit:DIMS%(36),X%(26),R%(2),
```

```
A$(6):FINISH%=FALSE
  660FORN%=1 TO2:R%(N%)=1:NEXTN%
  670RESTORE360
  680FORN%=1 TO36:READE%:S%(N%)=E%:NEXTN%
  690FORN%=0 TO26:X%(N%)=0:NEXTN%
  700B$=CHR$8+CHR$8+CHR$10
  710C$=CHR$239
  720A$(1)=CHR$224+CHR$225+B$+CHR$226+CH
R$227
  730A$(2)=CHR$228+CHR$255+B$+CHR$255+CH
R$229
  740A$(3)=CHR$230+CHR$225+B$+CHR$226+CH
R$231
  750A$(4)=CHR$232+CHR$232+B$+CHR$232+CH
R$232
  760A$(5)=CHR$233+CHR$234+B$+CHR$235+CH
R$236
  770A$(6)=CHR$237+CHR$237+B$+CHR$238+CH
R$238
  780VDU23,224,0,0,0,0,0,0,0,1,23,225,1,
0,0,0,0,0,0,0,23,226,0,0,0,0,0,0,128,2
3,227,128,0,0,0,0,0,0,0,23,228,0,0,0,0,1
2,12,0,0,23,229,0,0,48,48,0,0,0,0,23,230
,0,0,0,0,12,12,0,1,23,231,128,0,48,48,0,
0,0,0,23,232,0,0,0,24,24,0,0,0
  790VDU23,233,0,0,0,24,24,0,0,1,23,234,
1,0,0,24,24,0,0,0,23,235,0,0,0,24,24,0,0
,128,23,236,128,0,0,24,24,0,0,0,23,237,0
,0,0,24,24,0,0,24,23,238,24,0,0,24,24,0,
0,0,23,239,60,126,255,189,129,129,66,60
  800VDU23,241,60,126,255,255,255,255,12
6,60,23,255,0,0,0,0,0,0,0,0
  810VDU23;8202;0;0;0;
  820ENDPROC
  830DEFPROCcheck
  840IFR%(Q%)<35 THENENDPROC
  850FORN%=1+Y% TO7+Y%:IFX%(N%)=0 THENFI
NISH%=FALSE:ENDPROC ELSENEXT:FINISH%=TRU
E:ENDPROC
  860DEFPROCmain
  870VDU19,2,6,0,0,0
  880VDU23;8202;0;0;0;
  890*FX15,0
  900MOVE0,800:DRAW1280,800
  910MOVE640,0:DRAW640,1023
  920PRINTTAB(8,1);"YOU"
  930PRINTTAB(29,1);"ME"
  940IFP%=0 THENQ%=2:T%=29:W%=2:Y%=13:V%
=20:Z%=640 ELSEQ%=1:T%=9:W%=1:Y%=0:V%=0:
Z%=0
  950COLOUR1:COLOUR131:PRINTTAB(V%,3);"
PRESS 'D' TO ROLL"
  960G$=GET$:IFG$<>"D" THENGOTO960 ELSEP
ROCdice
  970IFP%=0 THENP%=1 ELSEP%=0
  980IFFINISH% THENFORN%=1 TO10000:NEXTN
%:ENDPROC
  990GOTO940
 1000ENDPROC
 1010DEFPROCtune
 1020RESTORE1030:FORN%=1 TO18:READE%,F%:
SOUND1,-15,E%,F%:NEXTN%:ENDPROC
 1030DATA129,5,137,5,145,5,129,10,117,15
,129,5,137,5,145,5,157,10,153,5,145,5,15
7,10,145,5,137,5,145,10,137,5,129,5,137,
25
```

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Memory examiner

***L Tanner** presents a machine code monitor for use with Simon's Basic*

My program *Mon-64* for the Commodore 64 and Simon's Basic is a machine code monitor which enables you to examine the contents of memory and also write, debug and run machine code routines. It also has a hex-dec converter and the ability to load and save code to and from tape.

Commands are entered as single command characters, followed by one, or in some cases, two parameters. In all cases, the command and the first parameter must not be separated by any spaces.

The commands are as follows (n represents any integer in the range 0 to 65535)

Cn . converts the decimal number to a hex number

Ln or *L-n* or *Ln-* or *Ln1-n2* lists the contents of memory (displays hex address followed by 10 hex bytes)

Mn or *M-n* or *Ln-* or *Ln1-n2* as for *List*, but first clears the screen and then allows you to alter or write to memory using the following keys

Crsr keys to move the cursor

0-9 and *A-F* to enter code

Return to enter a line of code into memory

To end, just press *Return* when next address appears

Gn go to address *n* and execute machine code routine

Wn1-n2 Write code to tape from address *n1* to *n2* inclusive

When this command is entered, you will be asked to enter a name to save the code under. This name can be up to 15 characters long

Rname read named code from tape

X exit *Mon-64* and return to Basic

Any errors made entering any command or in entering code in the memory mode will be detected and the error message *Come again?* will appear

While entering the memory or the *Go* command, you cannot enter an address lower than 8192 decimal (2000 hex). The memory up to this address is used by the *Mon-64* program itself

Notes

90-95	Clear screen and set up variables.
100-170	Command input.
180-195	Error messages
200-230	Convert procedure
300-590	List and memory routines.
600-650	Go routine
700-790	Read named program from tape
800-870	Write named program to tape
900-990	Procedure to verify numbers entered as parameters for various commands
1000-1090	Procedure to convert decimal numbers to hex numbers
1100-1164	Procedure to convert hex numbers to decimal numbers (used for memory command)

```
90 PRINT"■", Q=0 M=0 SP=1024 CC=55296
95 P$="■■■■■■■■■■■■■■■■■■■■■■■■■"
100 PRINT"■", W$="":INPUTW$
110 IFLEFT$(W$,1)="C"THEN200
120 IFLEFT$(W$,1)="L"THEN300
130 IFLEFT$(W$,1)="M"THENM=1 GOTO300
140 IFLEFT$(W$,1)="G"THEN600
150 IFLEFT$(W$,1)="R"THEN700
160 IFLEFT$(W$,1)="W"THEN800
170 IFW$="X"THENPRINT"■" END
180 PRINT
190 PRINT"■COME AGAIN ?■■" GOTO100
195 PRINT"■ILLEGAL ADDRESS.BELOW 8192■■"
    GOTO100
200 PRINT"■",
210 EXEC NUMBER
215 IFQ=1THENQ=0 GOTO190
216 IFF=SQRT<>FTHEN190
220 D=F EXEC CONVERT
230 PRINT PRINT"■", GOTO100
300 PRINT"■", IFM=1THENPRINT"■",
310 EXEC NUMBER
315 IFQ=1THENQ=0 GOTO190
316 IFM=1ANDF<8192THEN195
320 FORI=FTOTSTEP10
330 D=I EXEC CONVERT
340 PRINT"  "; FORJ=ITOI+9 IFJ>65535
    THENJ=I+9 GOTO350
345 D=PEEK(J) EXEC CONVERT
350 PRINT" ", NEXTJ PRINT NEXTI
360 IFM=0THENPRINT"■", GOTO100
370 M=0 R=0 C=6 IFF<256THENC=4
380 POKESP+R*40+C,PEEK(SP+R*40+C)OR128
    POKECC+R*40+C,6
390 GETO$ IFO$=""THEN390
400 IFO$="■"ANDC<35THENPOKESP+R*40+C,
    PEEK(SP+R*40+C)-128 C=C+1 GOTO380
405 IFO$="■"ANDC>4THENPOKESP+R*40+C,PEEK
    (SP+R*40+C)-128 C=C-1 GOTO380
410 IFO$="■"ANDR<24THENPOKESP+R*40+C,PEEK
    (SP+R*40+C)-128 R=R+1 GOTO380
415 IFO$="■"ANDR>0THENPOKESP+R*40+C,PEEK
    (SP+R*40+C)-128 R=R-1 GOTO380
420 IFO$=CHR$(13)THEN450
421 IFO$=" "THENCH=32
422 IFO$>="0"ANDO$<="9"THENCH=ASC(O$)
423 IFO$>="A"ANDO$<="F"THENCH=ASC(O$)-64
430 IFO$<>" "AND(O$<"0"ORO$>"9")AND(O$
    <"A"ORO$>"F")ORC>34THEN380
431 IFO$=" "THENCH=32
432 IFO$>="0"ANDO$<="9"THENCH=ASC(O$)
433 IFO$>="A"ANDO$<="F"THENCH=ASC(O$)-64
440 POKESP+R*40+C,CH C=C+1 GOTO380
450 POKESP+R*40+C,PEEK(SP+R*40+C)-
    128 N$="" N=0
460 NP=PEEK(SP+R*40+N) IFNP=32THEN380
465 IFNP=58THEN500
470 IFNP>0ANDNP<7THENN$=N$+CHR$(NP+64)
480 IFNP>47ANDNP<58THENN$=N$+CHR$(NP)
490 N=N+1 GOTO460
500 EXEC BACK
510 AD=A N=N+1 FORBP=1TO10 N$=""
520 IFPEEK(SP+R*40+N)<>32ANDAD<256
    THENC=4 GOTO380
525 IFPEEK(SP+R*40+N)<>32THENC=6 GOTO380
530 N=N+1 NP=PEEK(SP+R*40+N) IFNP>47THENN
    $=N$+CHR$(NP)
535 IFNP<7THENN$=N$+CHR$(NP+64)
536 IFNP=32ANDN<7THENPRINT PRINT GOTO100
537 IFNP=32ANDAD<256THENC=4 GOTO380
538 IFNP=32THENC=6 GOTO380
540 IFLEN(N$)=1THEN530
550 EXEC BACK
555 B(BP)=A N=N+1 NEXTBP
560 IFPEEK(SP+R*40+N)=32ANDPEEK(SP+R*40+N
    +1)=32ANDPEEK(SP+R*40+N+2)=32THEN570
565 C=6 IFAD<256THENC=4
566 GOTO380
570 FORB=ADTOAD+9 POKEB,B(B-AD+1) NEXTB
575 D=AD+10 PRINTLEFT$(P$,2+R), EXEC CONVERT
580 PRINT"  ■" R=R+1 IFR>24THENR=24
585 C=4 IFD>255THENC=6
590 GOTO380
600 PRINT"■",
610 EXEC NUMBER
620 IFQ=1THENQ=0 GOTO190
625 IFF<8192THEN195
630 IFF=SQRT<>FTHEN190
640 SYSF
650 GOTO100
700 PRINT"■",
```

```
710 P=2 F$=""
720 C$=MID$(W$,P,1) IFC$=""THEN740
730 F$=F$+C$ P=P+1 GOTO720
740 IFLEN(F$)>15THEN190
750 OPEN1,1,0,F$
760 INPUT#1,AD
770 INPUT#1,B POKEAD,B AD=AD+1
780 IFST=0THEN770
790 CLOSE1 GOTO100
800 PRINT"■",
810 EXEC NUMBER
815 IFQ=1THENQ=0 GOTO190
820 IFF=0ORT=65535ORF=TTHEN190
830 INPUT"NAME",F$ IFF$=""ORLEN(F$)>
    15THENPRINT"■", GOTO830
840 OPEN1,1,1,F$
850 PRINT#1,F
860 FORI=FTOT PRINT#1,PEEK(I) NEXTI
870 CLOSE1 GOTO100
900 PROC NUMBER
910 P=2 F$="" T$=""
920 C$=MID$(W$,P,1) IFC$="-"THENP=P+1
    GOTO960
930 IFC$=""THENT$=F$ GOTO990
940 IFC$<"0"ORC$>"9"THENQ=1 GOTO999
950 F$=F$+C$ P=P+1 GOTO920
960 C$=MID$(W$,P,1) IFC$=""THEN990
970 IFC$<"0"ORC$>"9"THENQ=1 GOTO999
980 T$=T$+C$ P=P+1 GOTO960
990 F=VAL(F$) T=VAL(T$) IFT=0THENT=65535
995 IFF<0ORF>65535ORT<0ORT>65535ORT<FTHENQ=1
999 END PROC
1000 PROC CONVERT
1001 PRINT"$",
1010 X(1)=INT(D/4096) Z=D-X(1)*4096
1020 X(2)=INT(Z/256) Z=Z-X(2)*256
1030 X(3)=INT(Z/16) X(4)=Z-X(3)*16
1050 Z=1 IFX(1)=0ANDX(2)=0THENZ=3
1060 FORY=ZTO4
1070 IFX(Y)<10THENPRINTCHR$(X(Y)+48),
     ELSE PRINTCHR$(X(Y)+55),
1080 NEXTY
1090 END PROC
1100 PROC BACK
1110 A=0 IFLEN(N$)=2THENN$="00"+N$
1120 IFLEFT$(N$,1)<="9"THENB=ASC(LEFT$
     (N$,1))-48 A=A+B*4096
1125 IFLEFT$(N$,1)>="A"THENB=ASC(LEFT$
     (N$,1))-55 A=A+B*4096
1130 IFMID$(N$,2,1)<="9"THENB=ASC(MID$
     (N$,2,1))-48 A=A+B*256
1135 IFMID$(N$,2,1)>="A"THENB=ASC(MID$
     (N$,2,1))-55 A=A+B*256
1140 IFMID$(N$,3,1)<="9"THENB=ASC(MID$
     (N$,3,1))-48 A=A+B*16
1145 IFMID$(N$,3,1)>="A"THENB=ASC(MID$
     (N$,3,1))-55 A=A+B*16
1150 IFRIGHT$(N$,1)<="9"THENB=ASC(RIGHT$
     (N$,1))-48 A=A+B
1155 IFRIGHT$(N$,1)>="A"THENB=ASC(RIGHT$
     (N$,1))-55 A=A+B
1160 END PROC
```

OPEN FORUM

Open Forum is for you to publish your programs and ideas. Take care that the listings you send in are all bug-free. Your documentation should start with a general description of the program and what it does and then give some detail of how the program is constructed. We will pay the _Program of the Week_ double our new fee of £6 for each program published.

Bingo

on Spectrum

This program was written to simulate one of the larger electronic bingo machines used in clubs around the country and might be of use to some of the smaller clubs where bingo is regularly played. It randomly draws the numbers 1 to 90 and illuminates them on a checking grid. After the first five numbers have been drawn a buzzer sounds and a reminder to give a Five Number Check is flashed on the screen before the game continues.

No instructions are necessary since sufficient information is constantly displayed on screen including the last number called and the total numbers drawn so far (for jackpot accumulators).

Program notes

Lines 70 to 270 are used to set up the screen display and most of the variables.

Lines 280 to 310 are a short machine code routine to store the screen so that a new game may be started without waiting for the screen to plot again. The remaining lines are the actual program and it may be of interest the way that the *Paper 6 Over 1*

Line 430 will effectively backlight the numbers on the grid as they are drawn and this provides a neat way of ensuring that no number is drawn twice by using the *Attr* function in line 420 to check for Bright Yellow Paper and looping back to 370 if this is the case. Capital *R* was chosen for new game since this involves two key presses preventing accidental erasure of game.

The program was written on a 48K Spectrum but should run on either model.

```
  10 REM ****** BINGO ******
     © Keith Murray 8/8/83
  20 BORDER 5: PAPER 5: CLS
  30 LET a=20: LET b=15: LET d=.
1
  40 FOR n=175 TO 19*8+7 STEP -8
  50 PLOT 0,n: DRAW 19*8+7,0: NE
XT n
  60 FOR n=0 TO 19*9 STEP 16
  70 PLOT n,175: DRAW 0,-9*5: NE
XT n
  80 PLOT 0,87: DRAW 96,0: DRAW
0,-32: DRAW -96,0: DRAW 0,32
  90 PLOT 0,40: DRAW 96,0: DRAW
0,-32: DRAW -96,0: DRAW 0,32
 100 PLOT 143,87: DRAW 112,0: DR
AW 0,-32: DRAW -112,0: DRAW 0,32
 110 PLOT 143,40: DRAW 112,0: DR
AW 0,-32: DRAW -112,0: DRAW 0,32
 120 PRINT BRIGHT 1, OVER 1,AT 0
,0,' 1 2 3 4 5 6 7 8 910'
 130 LET x=1: LET y=0
 140 FOR n=11 TO 90: PRINT BRIGH
T 1, OVER 1,AT x,y,n,
 150 LET y=y+2
 160 IF y>19 THEN LET x=x+2: LET
 y=0
 170 NEXT n
 180 FOR r=11 TO 14: FOR c=0 TO
11: POKE 22528+32*r+c,104: NEXT
c: NEXT r
 190 FOR r=17 TO 20: FOR c=0 TO
11: POKE 22528+32*r+c,104: NEXT
c: NEXT r
 200 FOR r=11 TO 14: FOR c=18 TO
31: POKE 22528+32*r+c,104: NEXT
c: NEXT r
 210 FOR r=17 TO 20: FOR c=18 TO
31: POKE 22528+32*r+c,104: NEXT
c: NEXT r
 220 PRINT PAPER 7, INK 2,,AT 0,
23,"BINGO"
 230 PRINT AT 2,22,"Any key": AT
3,22,"to begin": AT 5,22,"Capital
R": AT 5,22,"for new": AT 7,22,"g
ame"
 240 PRINT PAPER 8; FLASH 1,AT 1
2,19,"PLEASE SHOUT",AT 13,19,"LO
UD & CLEAR"
 250 PRINT BRIGHT 1,AT 18,1,"NUM
BERS",AT 19,1,"CALLED"
 260 PRINT BRIGHT 1,AT 12,1,"LAS
T",AT 13,1,"NUMBER"
 270 PRINT BRIGHT 1, PAPER 1, IN
K 5, FLASH 1,AT 18,19,"GAME ABO
UT",AT 19,19," TO BEGIN"
 280 FOR f=30000 TO 30023: READ
z: POKE f,z: NEXT f
 290 DATA 33,0,64,17,80,195,1,19
2,26,237,176,201
 300 DATA 33,80,195,17,0,64,1,19
2,26,237,176,201
 310 RANDOMIZE USR 30000
 320 LET numbers called=0
 330 IF INKEY$<>"" THEN GO TO 33
0
 340 IF INKEY$="" THEN GO TO 340
 350 IF INKEY$="R" THEN RANDOMIZ
E USR 30012: GO TO 320
 360 PRINT INK 2, PAPER 7, FLASH
1, BRIGHT 1,AT 18,19,"GAME STAR
TED",AT 19,19," QUIET PLEASE"
 370 LET c=INT (RND*90)+1
 380 LET i=INT (c/10)
 390 LET y=(c-(i*10)-1)*2
 400 IF c-(i*10)=0 THEN LET y=18
: LET i=i-1
 410 IF c=10 THEN LET y=18
 420 IF ATTR (i,y)=112 THEN GO T
O 370
 430 BEEP d,a: BEEP d,b: PRINT P
APER 6, OVER 1, BRIGHT 1,AT i,y,
c: LET numbers called=numbers
called+1
 440 LET h=INT (c/10): LET l=c-h
*10
 450 PRINT PAPER 7, BRIGHT 1,AT
10,9,h,l
 460 PRINT PAPER 7, BRIGHT 1,AT
19,9,numbers called
 470 IF numbers called=5 THEN PR
INT INK 7, PAPER 1, FLASH 1,AT 1
8,19,"FIVE NUMBER",AT 19,19,"
CHECK": BEEP 2,10: PRINT BR
IGHT 1, PAPER 5,AT 18,19,"ANY K
EY TO",AT 19,19,"  CONTINUE"
 480 GO TO 330
```

Bingo
by Keith Murray

Monkey

on Vic20

This is an arcade-style game involving a monkey in a tree.

1st listing

5-145	Titles
150-310	Data for chars
320-400	Instructions
420	Auto loading of game

2nd listing

0-1	Set up variables
7-11	Skill level
12-55	Define chars under 5's
60-195	Set up screen
200-260	Position monkey
270-310	? Monkey
325-400	Input from keyboard
410-loop	According to skill level
415-430	Clear monkey
1000-1090	Shoot routine
1100-1420	Hit routine
2000-3010	High score table
3040-3070	Play again?
4000	Sound

Hints on typing

Monkey climb except shifted

Any graphics in the instructions is a table shifted

How to play

Each time you hit the monkey he doesn't move up a level.

The skill level determines how long the monkey stays in the tree.

```
5 POKE36879,75 PRINT"[CLR]" POKE36865,135
10 PRINT" M⌐| | |  ⌐ \ /
20 PRINT" | || |N| |/ |  V
30 PRINT" | || |N| |< |-  |
40 PRINT" | || || | |\ |  |
50 PRINT" | |_|| | |\ |_  |
55 PRINT"■■ ■■■ ■  ■ ■  ■ ■■■
60 PRINT" ■  ■  ■ ■■ ■■ ■ ■
70 PRINT" ■  ■  ■ ■ ■ ■ ■■■
80 PRINT" ■  ■  ■ ■  ■ ■ ■
90 PRINT" ■  ■  ■ ■  ■ ■ ■
100 PRINT" ■■■ ■■■ ■ ■  ■ ■■■
110 PRINT"■■  BY MATT. TOOLEY"
120 PRINT"
125 FORX=135TO37STEP-1 POKE36865,X FORXX=1TO30 NE
XTXX,X
130 PRINT"■   PRESS ANY KEY  "
140 GETB$ IFB$=""THEN140
145 PRINT"]    PLEASE WAIT   "
150 DATA0,15,28,4,28,48,32,28,0,0,128,64,64,64,
```

```
131,134
160 DATA136,232,104,16,16,63,96,192,104,20,76,120
,112,120,0,0
170 DATA0 0,1,2,2,2,193,97,0,240,56,32,56,6,2,20
180 DATA97,50,50,62,14,1,0,0,17,23,14,0,0,252,6,3
190 DATA7,24,99,76,147,168,41,74,120,102,219,60,2
55,255 255,126,224,28,134.97,201 36 148
200 DATA82,74,74,86,86,36,4,4,4,82,82,98,98,40,40
,32,32
210 DATA123,129,129,255,255,129,129,129,24,60,126
,60,60,24,60,60
220 DATA255,255,255,255,255,255,255,255
300 FORX=7168TO7295 READS POKEX,S NEXT
310 FORX=0TO1024 POKE5120+X,PEEK(32768+X) NEXT
315 PRINTCHR$(14)
320 PRINT"   MONKEY  CLIMB"
330 PRINT"   ------------"
340 PRINT"THIS PROGRAM MUST BE  LOADED AND RUN B
EFORE PLAYING   "
350 PRINT"      "
360 PRINT"THE MONKEY "  "  ING  TO CLIMB UP THE T
REES TO REACH THE '  ANAS  AT THE TOP."
370 PRINT"YOUR CRUEL TASK IS TO SHOOT HIM DOWN.TO
DO  THIS PRESS THE NUMBERTHE',
380 PRINT" MONKEY IS SWING   OVER AT THE TIME."
390 PRINT"F AND WHEN YOU HIT   HIM 10 TIMES HE F
ALLS AND BEGINS CLIMBING   AGAIN!!"
400 PRINT"    "
410 GETA$ IFA$=""THEN410
420 PRINTCHR$(142) PRINT"    LOADING GAME "
430 LOAD"",1,1
```

```
0 DIMHS(11),HS$(11) POKE36879,27 HI=0 PRINTCHR$(8)
1 FORU=1TO10 HS(U)=000 HS$(U)="----------" SK(U)=
0 NEXT POKE36869,255
5 REM*SKILL LEVEL
7 PRINT"SKILL LEVEL       1(HARDEST)-
9(EASIEST)"
8 GETQ$ IFQ$=""THEN8
9 IFVAL(Q$)<1ORVAL(Q$)>9THEN1
10 SK=INT(VAL(Q$)*3)
11 PRINT""
12 REM*DEFINE CHARS
13 A$="AC"
20 B$="DEFG"
30 C$="HIJKL"
40 D$="M"
50 E$=""
55 F$="   "
56 REM*SET UP SCREEN
60 FORX=0TO21 POKE7724+X,15 POKE7724+X+30720,0 NE
XT
80 PRINT""SPC(2),C$,SPC(4),C$,SPC(4),C$
90 PRINT"" FORX=0TO15 PRINTSPC(3),D$,SPC(7),
D$ SPC(7),D$ NEXT
100 PRINT"0010200003040000506000"
120 PRINT"SCORE -",SPC(5) "HIGH -"
130 PRINT"****MONKEY CLIMB****"
190 FORY=LEN(E$)TO6STEP-1 PRINT""SC"
"HS(1)""
195 PRINT"SKILL LEVEL"INT
(SK/3)""
196 REM*POSISTION MONKEY
200 X=INT(RND(1)*6)+1
210 IFX=1THENSP=1 C=0
220 IFX=2THENSP=4 C=1
230 IFX=3THENSP=8 C=0
240 IFX=4THENSP=11 C=1
250 IFX=5THENSP=15 C=0
260 IFX=6THENSP=18 C=1
270 REM*? MONKEY
280 PRINTMID$(E$,1,Y)
300 IFC=1THENPRINT""SPC(SP),A$ GOTO320
310 IFC=0THENPRINT""SPC(SP),B$
320 T=0 FORTT=1TOSK
325 REM*INPUT KEYBOARD
330 GETR$
340 IFR$="1"THENPL=8144 T=1 GOSUB1000 GOTO400
350 IFR$="2"THENPL=8146 T=1 GOSUB1000 GOTO400
360 IFR$="3"THENPL=8151 T=1 GOSUB1000 GOTO400
370 IFR$="4"THENPL=8153 T=1 GOSUB1000 GOTO400
380 IFR$="5"THENPL=8158 T=1 GOSUB1000 GOTO400
390 IFR$="6"THENPL=8160 T=1 GOSUB1000 GOTO400
400 IFT<>0THENT=0 GOTO420
410 NEXT
415 REM*CLEAR MONKEY
420 PRINTMID$(E$,1,Y),SPC(SP),F$ IFHI=10THENY=LEN
(E$) HI=0
430 NEXTY GOTO2000
999 REM*SHOOT
1000 FORYY=1TO16
1010 IFPEEK(PL-(YY*22))=2THEN4000
1011 IFPEEK(PL-(YY*22))=3THEN4000
1020 IFPEEK(PL-(YY*22))=6THEN4000
1030 IFPEEK(PL-(YY*22))=7THEN4000
1040 POKEPL-(YY*22),14
1045 POKEPL+30720-(YY*22),0
1047 FOR P=1TO70 NEXT
1050 POKEPL-(YY*22),160
1060 NEXT RETURN
1100 IFC=1THEN1400
1104 REM*HIT
1105 PRINT"",MID$(E$,1,Y),SPC(SP-1) "HIT"
1110 FORQ=1TO200 NEXT
1200 PRINT"",MID$(E$,1,Y),SPC(SP-1),"   "
1300 POKEPL-(YY*22),160 SC=SC+25 HI=HI+1 Y=Y+1 RE
TURN
1400 PRINT"",MID$(E$,1,Y),SPC(SP),"HIT"
1410 FORQ=1TO200 NEXT
1420 PRINT"",MID$(E$,1,Y),SPC(SP),"   "
1430 POKEPL-(YY*22) 160 SC=SC+25 HI=HI+1 Y=Y+1 RE
TURN
1999 REM*HIGH SCORE
2000 IFSC>HS(10)THENHS(10)=SC SK(10)=INT(SK/3) GO
TO2002
2001 GOTO2010
2002 PRINT"YOU HAVE MADE THE TOP TEN!PLEASE ENTE
R NAME (MAX 10).
2003 INPUT"NAME",HS$(10) IFLEN(HS$(10))>10THENPRI
NT"" GOTO2003
2010 FORN=1TO9
2020 IFHS(N)<HS(N+1)THEN2040
2030 NEXT GOTO2050
2040 Z=HS(N) HS(N)=HS(N+1) HS(N+1)=Z
2045 Z$=HS$(N) HS$(N)=HS$(N+1) HS$(N+1)=Z$
2046 KS=SK(N) SK(N)=SK(N+1) SK(N+1)=KS
2047 REM SORT ROUTINE
2050 FORN=1TO9
2060 IFHS(N)<HS(N+1)THEN2010
2070 NEXT PRINT""
2080 PRINT"** HIGH SCORE TABLE **"
2081 PRINT"NAME       SCORE  SKILL"
2085 REM*TABLE
2086 FORN=1TO10
2090 PRINT""HS$(N),HS(N)," "SK(N)
3000 NEXT
3010 PRINT"PRESS ANY KEY"
3020 GETR$ IFR$=""THEN3020
3030 PRINT""
3040 PRINT"PLAY AGAIN?"
3050 GETR$ IFR$=""THEN3050
3060 IFR$="Y"THENSC=0 POKE36869,255 GOTO7
3070 POKE36869,240 POKE36879,27 PRINT"" END
3090 REM SOUND
4000 FORNO=15TO0STEP-1 POKE36876,128 POKE36878,NO
 FORNN=1TO40 NEXT NEXT
4010 GOTO1100
```

Monkey
by M Tooley


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For 48K Spectrum
DOOMSDAY CASTLE

Bumble Bee

on BBC

The program should expand your repertoire of tunes for your BBC micro (A or B). Although it uses only one voice to play 'Flight of the Bumble Bee' it still sounds good, and also creates a nice graphical display at the same time. The tune has three speeds of flight instructions are included in the program. If you list the program after running (not in mode 7), all the * characters will have turned into bees!

```
  10REM ********************************         ** FLIGHT OF THE BUMBLE-BEE ***
       ********************************
  20 VDU23,ASC('*"),0,112,136,100,22,45.175,46
  30MODE7
  40FORF=0TO1:PRINTCHR$(141)CHR$(131)CHR$(157)"    FLIGHT OF THE BUMBLE BEE":NE
XT
  50PRINT'"       by N.Rimsky Korsakoff"
  60PRINT'"       Arranged by Tim Smith"
  70PRINT'"How fast do you want the bee to move ?"
  80PRINT''"1. Dog after cat speed."
  90PRINT"2. Old mouse after cheese speed."
 100PRINT"3. Fast as possible with one wing."
 110PRINT'''"Please enter your choice. <1,2 OR 3>"
 120*FX15,0
 130C$=GET$:IF C$="1" C=1 ELSE IF C$="2"THEN C=2 ELSE IF C$="3" C=3 ELSEPRINT''
'AWKWARD (''":FORF=0TO5000:NEXT:C=2
 140ONERROR GOTO390
 150MODE2
 160ON ERROR OFF
 170B=1:D=0:A=0
 180VDU12,23;8202;0;0;0;
 190REPEAT:PROCbee
 200DRAW (B-D)*20+10,A*5+50
 210IF B MOD60=55 THEN D=B:MOVE0,0:GCOL0,RND(7)
 220UNTILFALSE
 230DEF PROCbee
 240READA
 250B=B+1
 260IF A=0 THEN V=0 ELSE V=-15
 270SOUND1,V,A,C:SOUND2,V,A,C:SOUND3,V,A,C
 280 IF B=511 THEN A=INKEY(900):RUN
 290ENDPROC
 300DATA165,161,157,153,157,153,149,145,149,145,141,137,133,129,125,121,117,113
,109,105,109,105,101,97,101,97,93,89,85,81,77,73,69,65,61,57,61,57,53,49,69,65,6
1,57,61,57,53,49
 310DATA69,65,61,57,53,73,69,65,69,65,61,57,53,57,61,65,69,65,61,57,53,57,61,65
,69,65,61,57,53,57,61,65,69,65,61,57,61,57,53,49,53,57,61,65,69,73,69,65
 320DATA69,65,61,57,61,57,53,49,53,57,61,57,69,77,81,85,89,85,81,77,73,93,89,85
,89,85,81,77,73,77,81,85,89,85,81,77,73,93,89,85,89,85,81,77,73,77,81,85
 330DATA89,85,81,77,81,77,73,69,73,77,81,85,89,93,89,85,89,85,81,77,81,77,73,69
,73,77,81,85,89,93,89,85,89,41,89,41,89,41,89,41,93,45,93,45,93,45,93,45,89,41,8
9,41,89,41,89,41,93,45,93,45,93,45,93,45,89,93,89,85,89,93,89,85,89,93,89,85,89
 340DATA93,89,85,89,93,97,101,105,101,97,93,89,93,97,101,105,101,97,93,89,41,89
,41,109,61,109,61,113,65,113,65,113,65,113,65,109,61,109,61,109,61,109,61,113,65
,113,65,113,65,113,65,109,113,109,105,109,113,109,105,109,113,109,105,109,113
 350DATA109,105,109,113,117,121,125,121,117,113,109,113,117,121,125,121,117,113
,109,105,101,97,93,113,109,105,109,105,101,97,93,97,101,105,157,153,149,145,149,
145,141,137,141,145,149,153,149,153,157,161,165,161,157,153,157,153
 360DATA149,145,149,145,141,137,133,129,125,121,117,121,117,113,117,121,117,113
,117,121,117,113,117,121,117,113,117,121,117,113,69,73,69,65,69,73,69,65,69,73,6
9,65
 370DATA69,65,61,57,61,57,53,49,53,49,45,41,37,33,29,25,21,21,0,0117,0,101,0,89
,0,77,0,89,0,101,0,117,117,117,0,165,0,149,0,137,0,121,0,177,0,149,0,165,165,0,0
,37,41,45,49,53,57,61,65,69,73,77,81,85,89,93,97,101,105,109,113,117,121,125
 380DATA129,133,137,141,145,149,153,157,161,165,173,177,181,185,0,0,0,0,0,0,0,1
77,0,0,0,0,0,0,0,89,0,0,0,0,0,0,41,0,41,41,41,41,41,41,41,0,0,0,0,0,0,0,0
 390MODE5:GOTO170
```

Bumble Bee
by Tim Smith

Animator

on BBC

This program will only work on the model B. The program allows you to draw up to 15 pictures on the screen and then animate them by displaying them one after the other.

Instructions on creating the pictures and storing them into memory are included in the program. To restart the program press *Escape* key.

```
1REM /\    WRITTEN BY KEVIN BOYD
10ONERRORRUN
20MODE7
30PROCintro
40MODE2
50*KEY2Q
60*KEY4A
70*KEY6F
80VDU23,1,0;0;0;0;
90*FX4,1
100SP=6
110M=5:COL=1
120X=600:Y=500
130VDU19,COL,7,0,0,0,0
140MOVEX,Y
150GCOL0,COL
160K=INKEY(0)
170IFK=65ORK=70ORK=82THEN390
180IFK=44THENSP=SP-1:SOUND1,-10,SP,3
190IFK=46THENSP=SP+1:SOUND1,-10,SP,3
200IFSP<1THENSOUND1,-15,100,2:SP=1
210IFK=136THENX=X-SP
220IFK=137THENX=X+SP
230IFK=138THENY=Y-SP
240IFK=139THENY=Y+SP
250IFK=&7F THEN M=7
260IFK=&87 THEN M=5
270IFK=32THENVDU19,COL,0,0,0,0;COL=COL+1:VDU19,COL,7,0,0,0,0:PRINTCHR$7
280IFK=81THEN:COL=COL+1:VDU19,COL,7,0,0,0,0:PRINTCHR$7
290IFCOL>15 THEN K=65:GOTO390
300IFX<0THENX=0
310IFX>1279THENX=1279
320IFY<0THENY=0
330IFY>1023THENY=1023
340PLOTM,X,Y
350PLOT69,X,Y
360GOTO140
370
380
390FORAN=1TOCOL:VDU19,AN,0,0,0,0:NEXT
400FORAN=1TOCOL
410VDU19,AN,7,0,0,0
420IFK=70THENA$=GET$
430IFK=65ORK=82THENFORD=1TO1000:NEXTD
440VDU19,AN,0,0,0,0
450NEXT
460IFK=82THEN390
470PRINTCHR$7:*FX15,1
480A$=GET$
490IFA$="R"THEN390
500CLS
510GOTO100
520DEFPROCintro
530PRINT  '   I N S T R U C T I O N S"
540PRINT "CURSOR KEYS MOVE LINE"
550PRINT "DELETE KEY = DELETE MODE"
560PRINT "COPY KEY = LINE MODE"
570PRINT "< = DECREASE STEP.   > = INCREASE STEP.
580PRINT "F2 = STORE FRAME BUT STILL DISPLAYED"
590PRINT "SPACE BAR = STORE FRAME AND PICTURE     DISAPEARS FORM VIEW"
600PRINT"F4 = ANIMATE AUTOMATICALLY"
610PRINT"F6 = ANIMATE MANUALLY. EACH FRAME IS     DISPLAYED WHEN A KEY IS PRE
SSED.'
620PRINT"AFTER ANIMATION IS FINISHED  R  WILL     REPEAT THE ANIMATION"
630PRINT '   PRESS ANY KEY TO START'
640A$=GET$:ENDPROC
```

Animator
by Kevin Boyd

Stopwatch

on BBC

This program will work on the BBC A or B It will give you all the main stopwatch features including lap stop start and reset

Program notes

10-40	Attributes
50-210	Main Program
210-540	Procedures

```
10 REM *** STOPWATCH ***
20 REM ***  D.PRYKE  ***
30 REM ***  C.PRYKE  ***
40 REM ***  AGED 13  ***
50 MODE7
60 PRINTTAB(12)CHR$141;CHR$133"STOP WATCH"
70 PRINTTAB(12)CHR$141;CHR$133"STOP WATCH"
80 PRINT
90 PRINTTAB(7)CHR$130;"by DAVID & COLIN PRYKE"
100 VDU23;8202;0;0;0;
110GOO=0
120PROCRESET
130 T = TIME
140 PRINTTAB(15,12);CHR$141;CHR$131;(TIME-T)/100
150 PRINTTAB(15,13);CHR$141;CHR$131;(TIME-T)/100
160A$=INKEY$(0)
170IF A$="" GOTO140
180IF A$="S" PROCSS
190IF A$="L" PROCLAP
200IF A$="R" PROCRESET
210GOTO140
220DEFPROCLAP
230REPEAT
240B$=INKEY$(0)
250UNTIL B$<>""
260ENDPROC
270DEFPROCRESET
280PRINTTAB(15,12);"          "
290PRINTTAB(15,13);"          "
300PRINTTAB(15,12);CHR$141;CHR$131;"0.00"
310PRINTTAB(15,13);CHR$141;CHR$131;"0.00"
320REPEAT
330B$=INKEY$(0)
340UNTIL B$="S"
350GOO=1
360GOTO130
370ENDPROC
380DEFPROCSS
390IF GOO=1 THEN GOO=0:GOTO 410
400IF GOO=0 THEN GOO=1
410IF GOO=0 THEN PROCSTOP
420IF GOO=1 THEN PROCSTART
430ENDPROC
440DEFPROCSTOP
450t,me=TIME
460REPEAT
470B$=INKEY$(0)
480UNTIL B$="S"
490PROCSS
500ENDPROC
510DEFPROCSTART
520TIME=t,me
530GOTO140
540ENDPROC
```

Stopwatch
by Colin Pryke

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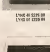
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Stock Market

on Vic20

Stock Market is a short game of pure chance, which demonstrates the use of arrays

Round 1 starts by showing the share indicator names the shares, their price and the change in price since the last round On the same screen the current financial state of both players is also shown Their cash, the number of shares held and value and the players total assets Total assets is the figure to keep an eye on as this shows who is winning The letter F must be pressed to leave this screen

The screen changes to show the share indicator and the assets of Player A only Player A hits any key to play except F which finishes his round Having pressed a key, he now selects which shares he wishes to deal in, and how many to buy If he enters 10 this indicates he is buying 10 shares To indicate that you are selling, you input −10 Player A can continue dealing in shares in this manner for as long as he wishes

This process is now repeated for Player B When Player B hits the letter F the shares are revalued at random and the screen is set for the next round The number of rounds completed is displayed in the top left-hand corner of the screen

Program notes

10	Screen and border both set to white Volume turned on
20-40	Sets variables
100	Prints Share Indicator and assets of both players
110	Holds screen at 100 until F is pressed
120	Sets screen for player A
130-140	Player A must press a key if F his turn is finished
150	Which shares is player A dealing in
160	Names the selected shares and ask how many
170	Increases the number of the selected shares held
180	Deducts the purchase price from cash in hand
190	Returns player A to line 120
500-570	As lines 120 190 but for player B
700-750	Revalues the price of the shares 730 and 740 ensure that prices do not fall below 0 or above 20
760	Counter increasing the round in play
770	End of round
1000-1080	Prints the Share Indicator Names prices and change in prices of shares
1490-1580	Prints player A's assets 1490 is the line that calculates total assets
2000-2080	Prints player B's assets 2000 is the line that calculates total assets
3000	Sound sub-routine

NB If screen keeps scrolling and the words share indicator leave the screen delete line 1070 or 1570 or both

```
10 POKE36879 25 POKE36878 15
20 CA=100 CB=100 AA=CA AB=CB
30 FORR=1TO4 SV(R)=10 NEXT
40 A$(1)="STORES" A$(2)="MOTORS"
   A$(3)="HOTELS" A$(4)="ALLOYS"
100 GOSUB1000 GOSUB1490 GOSUB2000
110 GETF$ IFF$<>"F"THEN110
120 GOSUB3000 GOSUB1000 GOSUB1490
130 GETB$ IFB$=""THEN130
140 IFB$="F"THEN500
150 PRINT"[illegible]WHICH
    SHARES" INPUTT
160 PRINTA$(T) "HOW MANY" INPUTS
170 A(T)=A(T)+S
180 CA=CA-S*SV(T)
190 GOTO120
500 GOSUB3000 GOSUB1000 GOSUB2000
510 GETB$ IFB$=""THEN510
520 IFB$="F"THEN700
530 PRINT"[illegible]WHICH
    SHARES" INPUTT
540 PRINTA$(T) "HOW MANY" INPUTS
550 B(T)=B(T)+S
560 CB=CB-S*SV(T)
570 GOTO500
700 FORW=1TO4
710 X(W)=INT(RND(1)*9)-4
720 SV(W)=SV(W)+X(W)
730 IFSV(W)<0THENSV(W)=0
740 IFSV(W)>20THENSV(W)=20
750 NEXT
760 L=L+1
770 GOTO100
1000 PRINT"[illegible]"L
1010 PRINT"[illegible]SHARE INDICATOR"
1020 PRINT"SHARES   VALUE CHANGE"
1030 PRINT"1.STORES   £"SV(1)
     PRINT"[illegible]"X(1)
1040 PRINT"2.MOTORS   £"SV(2)
     PRINT"[illegible]"X(2)
1050 PRINT"3.HOTELS   £"SV(3)
     PRINT"[illegible]"X(3)
1060 PRINT"4.ALLOYS   £"SV(4)
     PRINT"[illegible]"X(4)
1070 PRINT"----------------------"
1080 RETURN
1490 AA=CA+A(1)*SV(1)+A(2)*SV(2)
     +A(3)*SV(3)+A(4)*SV(4)
1500 PRINT"[illegible]PLAYER A[illegible]ASSETS
     [illegible]£"AA
1510 PRINT"[illegible]SHARES[illegible]NO[illegible]VALUE"
1520 PRINT"[illegible]1.STORES[illegible]"A(1) PRINT"[illegible]"
     ."[illegible]£"A(1)*SV(1)
1530 PRINT"2.MOTORS[illegible]"A(2) PRINT"[illegible]"
     "[illegible]£"A(2)*SV(2)
1540 PRINT"3.HOTELS[illegible]"A(3) PRINT"[illegible]"
     "[illegible]£"A(3)*SV(3)
1550 PRINT"4.ALLOYS[illegible]"A(4) PRINT"[illegible]"
     "[illegible]£"A(4)*SV(4)
1560 PRINT"[illegible]CASH[illegible]£"CA"[illegible]"
1570 PRINT"----------------------"
1580 RETURN
2000 AB=CB+B(1)*SV(1)+B(2)*SV(2)+
     B(3)*SV(3)+B(4)*SV(4)
2010 PRINT"[illegible]PLAYER B[illegible]ASSETS[illegible]£
     "AB
2020 PRINT"[illegible]SHARES[illegible]NO[illegible]VALUE"
2030 PRINT"[illegible]1.STORES[illegible]"B(1) PRINT"[illegible]"
     ."[illegible]£"B(1)*SV(1)
2040 PRINT"2.MOTORS[illegible]"B(2) PRINT"[illegible]"
     "[illegible]£"B(2)*SV(2)
2050 PRINT"3.HOTELS[illegible]"B(3) PRINT"[illegible]"
     "[illegible]£"B(3)*SV(3)
2060 PRINT"4.ALLOYS[illegible]"B(4) PRINT"[illegible]"
     "[illegible]£"B(4)*SV(4)
2070 PRINT"[illegible]CASH[illegible]£"CB"[illegible]"
2080 RETURN
3000 FORP=1TO20 POKE36876 225 NEXT
     POKE36876 0 RETURN
```

Stock Market
by M Dixon

Balencer

on Spectrum

This program adds up credits and debits on a balance sheet and then gives you a percentage for VAT Although created on the Spectrum there should be no problems with running it on any 16K ZX machine

```
   1 LET wr=0
   5 LET a=0  LET p=0  LET vat=0
  10 PRINT TAB 13,"*BALANCER*"
  20 INPUT "Do you need instruct
ions on use",a$
  30 IF a$="n" OR a$="no" OR a$=
"" THEN GO TO 100
  40 PRINT '' This program is d
esigned to"'"balance amounts of
money quickly"
  45 PRINT "and with precision"
  50 PRINT '" credits  debits  v
at"
  55 PRINT ''Do you use these he
adings to"'"work out the account
s normally  y/n"
  60 INPUT b$
  70 IF b$="n" THEN PRINT "You a
re in the wrong program"  LET a=
1
  79 IF b$="yes" OR b$="y" THEN
GO TO 92
  80 IF a=1 THEN INPUT "DO YOU W
ISH TO CONTINUE",c$
  90 IF c$="N" OR c$="NO" OR c$=
"n" OR c$="no" THEN STOP
  92 PRINT "Good.Now the compute
r will ask  you the amount of de
bits you "
  94 PRINT "have,you shoud type
the amount  there is then type i
n each one."
  95 PRINT "Do the same with cre
dits"
  98 PRINT "Please do not confus
e letters  with numbers nothing
 has been "
  99 PRINT "done to prevent this
 from being possible -THANKYOU"
 100 INPUT "Ready",k$
 110 CLS
 120 INPUT "How many debits are
there",a
 125 DIM b(80)
 130 FOR i=1 TO a
 135 CLS   PRINT "Enter debit ";
i
 140 INPUT d
 142 LET s=s+d
 145 LET b(i)=d
 150 NEXT i
 160 PRINT "NOW CREDITS "  PAUSE
 100
 165 PAUSE 100
 170 CLS   INPUT "How many credi
ts are",t
 175 DIM g(50)
 180 FOR q=1 TO t
 195 CLS . PRINT "Enter credit "
,q
 200 INPUT y
 210 LET p=p+y
 220 LET g(q)=y
 232 NEXT q
 240 IF t>i THEN LET z=t
 245 IF i>t THEN LET z=i
 250 PRINT ''''"RUN-DOWN FOLLO
WS"  PAUSE 200
 260 CLS
 300 PRINT [illegible]
 310 FOR x=1 TO z
 315 PRINT "£   ",
 320 PRINT g(x),"           ";b(x
)
 400 NEXT x
 405 LET v=p-s
 408 PRINT ''
 410 PRINT "without vat Totals",
v''
 415 INPUT "what is the vat perc
entage",vat
 420 LET ty=v*vat/100
 421 LET a=ty+tt
 432 PRINT "with vat total is=",
a
 440 INPUT "Did the bank give a
quote",j$
 450 IF j$="n" OR j$="no" THEN S
TOP
 460 PRINT "How much including v
at"
 470 INPUT j
 480 PRINT j
 490 IF j=tt THEN PRINT "your ba
lancing is correct"
 500 IF j>tt THEN PRINT "You are
£",j-tt;" out."
 510 IF tt>j THEN PRINT "you are
£",tt-j," out."
```

Balencer
by L Fountain

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GW6JJN

Tapped out

A few weeks ago I reviewed Morse Tutor programs They were very good but they lacked one feature that I would like to see When learning Morse, it is one thing to learn the code and to receive it adequately but it is quite something else to be able to tap it out on a Morse key This is often the stumbling block for many people

One of the oddities of the radio amateur licence says that until one has passed the Morse Code test then one cannot use Morse code on air — even on the bands that one is licenced to use for voice, RTTY, Data ASCII or whatever Why it is that we can use such codes as RTTY and ASCII and not the dear old Morse Code is one of life s little mysteries Because of this, the person learning Morse cannot try out his ability to tap the key, which isn't as simple as it sounds Until now that is

Paul Newman has sent in a routine for any Spectrum which will allow you to tap out Morse using the *Enter* key on the Spectrum The screen will then print out the dots and dashes that you have keyed Until you are able to tap out the dots and dashes with reasonable timing, then the display will not make much sense

```
10 CLS  BORDER 4
15 LET c=0  LET lastm=10  LET
   lasts=10
30 LET m=1  LET s=1
50 IF INKEY$=""  THEN LET
   s=s+1 GO TO 50
80 IF INKEY$>""  THEN LET
   m=m+1 GO TO 80
100 IF s>=2*lasts THEN PRINT "/";
110 IF m<=2*lasts THEN PRINT
    "—"; GO TO 30
112 PRINT "."
115 IF s>=2*lasts THEN GO TO 30
120 LET lasts=s  LET lastm=m
130 GO TO 30
```

This routine can also provide the basis for a bigger program since the essential algorithm for converting key presses to Morse code exists within the routine The output can be sent to the cassette port instead of the screen for example and on into the outside world

Peter St James has written in asking anyone who knows how to get an RTTY system going on a 48K Atari to get in touch with him at 36 Cleverley Estate, Wormholt Road Shepherds Bush, London W12

Ken Davies of Cardiff asks about buying a radio receiver which might be used in conjunction with computing The best advice I can give to anyone buying a receiver is to make sure that it has continuous reception up to 30 MHz and the ability to tune sidebands This is a form of narrow band transmission used by amateurs Both Yaesu and Trio are good makes Information from SMC, S M House Rumbridge Street, Totton, Southampton SO4 4DP or from Lowe Electronics Chesterfield Road Matlock DE4 5LE These are the Yaesu and Trio main dealers in the UK

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share or topics that you would like to see covered write to Ray Berry, Microradio *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD





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Korth Trilogy

This week a look at something different *The Korth Trilogy* is a set of booktapes, available separately, and written by one P K McBride. The books and tapes are for the 10 to 15-year-old age bracket. The books are slim volumes of, amazing coincidence, 64 pages each with nicely executed drawings and large type. The stories concern three young space-travellers and their struggles against the Korth, a race of aliens threatening the peace of the galaxy.

You may wonder what these books are doing here in the Adventure Corner. Well, on the front and back of the packages (which, incidentally, are shrink-wrapped and thus sealed from the browser's gaze) they are described as adventure packs with "science fiction adventure stories". This turns out to be a very loose description but the word "adventure" ensured that the books would end up with yours truly!

The technical details are of the type that rewrite quantum mechanics in one line. The ship accelerated to 100 times the speed of light — and did you know that "speed has never been the problem with ultra-light travel. After all, if you keep going faster than in the end you must finish up going faster than light itself! Most confusing — you would then get to where you were going before you had set out, in which case there would be no point in going.

Well, of course, it's easy to poke fun at this kind of book, but they are really not bad at all — and each of the three contains a tape of three programs also written by Mr McBride.

The programs, each of which covers an event found in the book, are very stylish and show a lot of charm. Are they Adventures? Unfortunately no. They are really strategy games distantly related to the genus *Adventeramus Gamus*.

The instructions are always put on-screen first, so that the player can digest them while the main program loads. When the program itself starts, the graphics are without exception, colourful and well-designed without being over-complicated.

FOG, from Part 3, *Into The Empire* has the player re-enacting a chapter in the book called "Fight in the the Fog". Steering his hover-scooter, the player has to attempt to shoot down the Korth fliers, while avoiding hitting his own allies. There are one or two games, like *Alpha* from Part 2, *Besieged* and *Raid* from Part 1 and *Escape From Arkaron* which are board-game like in play. Thus the play takes place on a grid, with the player issuing orders to his "pieces" — and then waiting for his opponent, the computer, to move his pieces.

In addition, there is a *Meteorite*-avoiding game and a *Lunar Lander*-type game. Both are done with a refreshing kind of originality.

My favourite, however, is *Empire* from the last book in the trilogy. This is as stylish a version of the old Kingdom as you will see, with its bar charts to show the state of your Empire, and the detailed analysis of 30 planets, giving you a graphic representation of how your commands are affecting the day-to-day life of your subjects.

Not Adventures then, but as little packages they are very useful, and will be a hit with younger players, while providing a lot of fun for older kids. At £4.95 each (tape + book), they are great value.

And now for some more names to be added to the Hobbit Hall of Fame.

Mrs E Prescott, who actually managed to get herself cursed in the course of the program for daring to answer back!

Peter Jakubski

Those are solutions run on the Spectrum version of *The Hobbit* but now, after waiting for several months for a solution on another machine, at last we have four, all in the same postbag!

First, three solutions on the Commodore.

David Lloyd with a score of 45 percent — David would like to know how to cross the stream in *Aztec's Tomb*, can any fellow Commodore help?

Joshua Levine, with scores of 72 percent (in two days), and 90 percent — Joshua asks me when *Valhalla* will be implemented for the Commodore 64. Nobody knows, Joshua, but if you enjoyed *The Hobbit*, rest assured that you will enjoy *Valhalla*!

Alan Wiggins, who had an interesting score of 102.5 percent! Some months ago I had a letter from a reader who had managed to score over 200 percent, but that is the only other score I have seen over 100 percent. Thanks to Alan, who sent a printout of the final scene, we now know about Melbourne House's English (not INGLISH!) lessons.

And our very first solution from a Beeb owner.

Alex Treacher. Congratulations, Alex, you're the first, but I hope not the last that we'll hear from. You haven't sent me a printout of the final paragraph, so we don't yet know if Melbourne House have learnt their grammar on the Beeb version. Alex's low score is 77.5 percent.

Finally, as a postscript Alex says "*Never tell Gollum your phone number. He might give you a ring!*" Thanks, Alex, don't call us. ■

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COMPATIBLE MODEM

M Kloska Westbourne Avenue Acton London W3 writes

Q **I wonder if you could tell me if the Tandy Model I accoustic modem by Prism is compatible with my Dragon 32 microcomputer? I am interested because I wish to use my Dragon with a modem.**

A I cannot say absolutely yes it will be compatible having never tried it However, you will need an RS232 on the cartridge slot, and you will have to rewrite the terminal software One RS232 interface for the Dragon that should be appropriate is made by Maplin for their own Dragon modem

LARGE LETTERS

Yunis Patel of Castelton Road Deepdale Preston, Lancashire writes

Q **Can you please tell me how to do big letters on the 16K ZX Spectrum I have spent all my computing time on it, but I am still at a loss**

A To create large letters you have to look at where the ZX Spectrum character set is stored at the top of the Rom This is dealt with partially in the manual in chapter 14

The character set is stored in the Rom from 15616 onwards As each character is made up of 8 x 8 pixels, each character uses eight addresses to store it (eight lines each of eight bits) What you have to do to get the enlarged characters is read each address of the character in turn Where there is a binary *1* print a graphic square and where there is a binary *0* leave a space The following program will supply the basis of what you need

```
100 Input a$
110 LET b = CODE a$
120 LET c = 15616+ (b*8)   256
130 FOR d = c TO c+8
140 DIM e$ (8)
150 LET f = PEEK d
160 FOR g = 7 TO 0 STEP -1
170 IF f-INT (f/2) *2 THEN LET e$ (g) = " "
180 LET f = INT (f/2)
190 NEXT g
200 PRINT e$
210 NEXT d
```

At line 100 you *Input* the character you want enlarged Lines 110 and 120 find it in the Rom and lines 130 to 160 store the character Lines 170 and 180 do the important working out — they read the value that is *Peeked* and determine whether or not it is a binary *1* If it is a one, then a square is stored in *e$* If it is not a one, a space is stored

Line 190 takes you back to the next value of *g*, which is the bit value When all eight bit of the byte have been dealt with and stored in *e$* (8), then line 200 prints it Line 210 goes back to look at the next address

SOFTWARE CONTROL

Albert Polovsteff of Kirby Road Crosby, Liverpool writes

Q **I have bought a second-hand Seikosha GP-100 printer from a friend who has moved abroad However, he accidentally took the manual with him As you can imagine, there are several things that are confusing me, and though he says he will send the manual on when he finds it, I do not expect to see it until well after Christmas.**

I can get by, but there is one thing I would like to know as soon as possible How do I get double size characters under software control? By the way, my computer is a BBC B

A All you need to do is send the correct code to the printer This is done by using *VDU 1 x* 'x' is the code of the character you want printed in double size To find this look up the Ascii value of 'Shift Out To return to normal you need to use *VDU 1, 15* where *15* is the Ascii code for Shift In

WHICH INTERFACE?

Paul Harris of Winchcombe Road Cheltenham writes

Q **I have a ZX Spectrum which is quite new, so it will be a long time before Interface 1 is made available to me I am thinking of adding a printer to my computer, but am wondering whether or not to get a Centronics or RS232 interface. What is the difference between them? Also, what does the IEE 488 do? Is it worth getting one of them for my Spectrum?**

A I would strongly advise that you go for a Centronics interface if you are thinking of attaching a printer Many of the printers available only have a Centronics port and an RS232 is far more expensive to add to a printer than a Centronics to your computer

It would take an entire article to explain the differences between the three interfaces you mention The RS232 is a serial port that transfers data one bit at a time, but can work in both directions Thus a peripheral can send data back to the computer, which is why it can be used for a modem Unfortunately the RS232 is a bastardised standard that can be, and is implemented in a host of almost incompatible forms

Originally, it called for a 25-way connection, but only three of the lines were actually specified They are transmit data (TX) receive data (RX) and a common Return line This leaves a mere 22 lines for every individual manufacturer to use This explains the many different types of RS232 that are seen In fact, the RS232C is the true standard because it can be used at +12v and −12v It is only because certain of the extra lines such as RTS and CTS are so commonly used that the standard can be maintained

The Centronics has 22 defined lines, and is called a parallel port because it sends its data eight bits, or one byte at a time Because it can only send data in one direction ie from the computer the interface is excellent for use with such things as printers but not for modems Indeed the interface was designed by the Centronics company for just this purpose

The defined lines are Strobe, 8 data lines, Acknowledge and Busy There are 11 common ground lines running between each of these acting as shielding to stop inteference Various non-defined lines are quite commonly used such as paper, empty initialise, or logic ground which is an extra safety precaution

The IEEE 488 is a more complex interface that can send data in both directions one byte at a time thus trying to combine both the Centronics and the RS232 It is mainly used with scientific instruments and is most usually found on Commodores' Pet series

It is more complex because though it can control up to 16 different peripherals at once and it uses data words — that is one byte where the upper four bits can carry a command, while the lower four carry the address of the device to which the command applies Sixteen lines are defined Besides the eight data lines, there are three handshaking lines and five control lines

This is only a very brief look at interfaces There is no point having a super 25 line full RS232 on a peripheral if your computer is only equipped to read five lines Further each of those five lines must hav a corresponding line on the peripheral If your computer needs to read a line that is not supplied then it will most likely crash unless one of the available lines can be rigged to pass the data the computer expects to see

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Ian Beardsmore and every week he will *Poke* back as many answers as he can The address is *Peek & Poke, PCW,* 12-13 Little Newport Street, London WC2R 3LD.

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WANTED. TI extended Basic module Tel Camborne 717593 evenings

WANTED Apple 11E computer system with drives and monitor and joy stick Tel Hallen Swanage (0929) 422836

WANTED Disc drive system for Nascom including CP/M Must be cheap but will repair if necessary might consider complete Nascom system if price right. Cash plus Tel 01 735 1962

WANTED Seikosha GP100A printer for Dragon Will pay £120 Tel Upminster 25610

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SWAP SPECTRUM SOFTWARE Many titles including All Ultimate Imagine etc. I am interested in Hi-soft, devpac assembler Tel New Mills 42443 (Derbyshire) ask for John after 4 pm

WANTED ZX Spectrum 48K Tel 0603 810854 any time

VAHALLA ADVENTURE for Spectrum in exchange for the Hobbit. Tel 8206 577049

WANTED BBC Micro Model B with software Pay up to £320 Tel 01-571 1815 after 4 pm ask for Paramit

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WANTED Commodore C2N cassette recorder with leads Will pay reasonable amount. Will collect from Manchester Liverpool area. Tel (day) Padgate 810646 ext 287 ext. 296 or (evening) Culcheth 5255 ask for Gordon.

WILL SWAP ETX Timegate Ant Attack Horace Goes Skiing Horace and the Spiders, Centipede (worth £37) for Kempston joystick or printer Tel 0621-815533

TO SWAP 16K ZX81 tape recorder few magazines + £100 for BBC B Tel Stoke Newington (N16) 254 6076 preferably after 7 pm

WANTED Commodore tv game, 3 000H Do you have one you want to get rid of? My rifle has broken, just the rifle would do Tel Colin 01-777 8178 evenings

WANTED Cassette recorder for Vic20 also wanted Ram unit. Tel Bexhill-on-Sea 224867

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Almost all the copies of PCW that you missed can still be bought as back issues for only 50p including postage and packing.

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LADDERS





A+F's *Chuckie Egg* was an excellent program for the Spectrum that simply had the misfortune to come out at more or less the same time as *Manic Miner*. It was still a fine game.

The company has now issued a version of *Chuckie Egg* for the Dragon 32. The idea is to move a little man up and down a series of ladders and planks collecting eggs.

The eggs are guarded by a number of ducks — at first these are fairly easy to avoid as they march mechanically back and forth. However, in later stages of the game you have to jump on and off of a precarious lift and a particularly determined-looking large yellow duck chases you around the screen.

It's very addictive and has dozens of levels — I don't know of anyone who has mastered all of those on the Spectrum version.

Program *Chuckie Egg*
Price *£6.95*
Micro *Dragon 32*
Supplier *A+F Software*
Unit 8
Canal Side Industrial Estate
Woodbine Street East
Rochdale
Lancashire OL16 5LB

VICIOUS PLANTS

The Birds and the Bees is the latest Spectrum game from Bug Byte. The graphics for the game are by one Matthew Smith — sound familiar? He is the programmer responsible for the amazing *Manic Miner* and so to a certain extent this game is a follow up.

Like *Miner*, the idea behind the game is very simple — move your bee around the screen collecting nectar whilst avoiding birds, vicious plants and centipedes.

The game is set apart by the quality of its graphics and little touches like the way it plays *Flight of the Bumble Bee* in the opening credits.

Naturally, after you have collected the nectar, your first impulse as a bee is to turn it into honey — the problem is this attracts a large brown bear who is very liable to steal it... a charming game.

Program *The Birds and the Bees*
Price *£5.95*
Micro *Spectrum 48K*
Supplier *Bug Byte*
Mulberry House
Canning Place
Liverpool L1 8JB

ALL-POWERFUL

Romik has recently issued a new language, *Forth*, for the Commodore 64 — the first I've seen on the machine.

The problem with Basic is that it is too slow for many purposes. Conversely machine code is very difficult to learn. Forth is a language in which the word is all powerful. Programs are built up from simple subroutines which are named and simply called by reference to that name.

To be exact, Romik's Forth is a version of Fig Forth which is the one the purists approve of since it was the original one.

For those Commodore 64 owners who wish to experiment with other languages this could be a good bet. The program comes with a fairly large manual, which details the various commands available to you in Forth. But if you have no previous experience with the language, you will certainly need to get a good beginner's guide in addition to the program.

Program *Fig Forth*
Price *£19.99*
Micro *Commodore 64*
Supplier *Romik Software*
272 Argyll Avenue
Slough SL1 4HE

3D SHAPES

Vu 3D was a surprising best seller on the Spectrum — it was basically a utility that enables you to construct three dimensional shapes and view them from different directions.

3D Graphics by New Dimension Software does the same thing for the Dragon 32. An object can be created and rotated about any of the three axes by pressing the keyboard.

Creating your shape is a matter of working out the design on paper and inputting figures which represent the distance of each point from an imaginary centre — it's tricky but logical. You can then see your shape in all its glory on the computer screen.

A short manual is provided with the program which looks reasonably easy to understand.

Program *3D Graphics*
Price *£7.95*
Micro *Dragon 32*
Supplier *New Dimension Software*
SL Rochester
92 Owler Lane
Sheffield S4 8GA

CAVALRY

Cases Computer Simulations has just issued *Battle 1917*. The game is loosely based on a campaign in the First World War. Unusually for a computer game, two players are required. It is played on a board divided up into 21 × 32 squares.

Each player has 29 pieces including infantry, cavalry, tanks, artillery and a king. Like chess, the object of the game is to capture this piece.

In each turn you must move your pieces, avoiding minefields and lakes, and fire your artillery — if you leave this too late you stand a reasonable chance of blowing yourself up. Fun for wargames fans.

Program *Battle 1917*
Price *£5.90*
Micro *Spectrum*
Supplier *Cases Computer Simulations*
14 Langton Way
London SE3 7TL

ENERGY PODS



Artic Computing has launched its first game for the increasingly popular Commodore 64 — a three screen arcade game called *Mothership*.

In the first screen the *Mothership* sends nasty drones to destroy you — in order to gain access to the ship you will have to destroy them all.

You are then transported to the inside of the *Mothership* which allows you to take control and pilot it until you reach your home base. The final task is to break through the barrier of energy pods which surround the planet's generators.

It's an epic game, incorporating features from just about every other game you ever heard of as well as some original ideas of its own.

Program *Mothership*
Price *£6.95*
Micro *Commodore 64*
Supplier *Artic Computing*
Main Street
Brandesburton
Driffield YO25 8RL

OVERLAPPING

There are any number of databases for the Spectrum available — all use some kind of menu option and there isn't very much to choose between them

Data Gene is a database from Audiogenic and is a little different, in that it borrows some clever ideas from expensive business packages — in particular, the idea of a series of overlapping menus, each one a subset of the previous one

Simply making the required choices from the menus the user can build up the particular database he requires without (supposedly) needing to understand what's going on in programming terms at all

The program includes all the usual commands for the creation of files, entering and printing of records

Program *Data Gene*
Price *£9 95*
Micro *Spectrum*
Supplier *Audiogenic*
PO Box 88
Reading

BLOODSTONE

Terminal Software has proved it can do some pretty spectacular things on the Vic20 when it managed to cram a pinball game into the unexpanded machine

Nosferatu though requires an extra 8K since it is an adventure of fairly large proportions Your task is to enter search and return home from *Nosferatu's* dark and forbidding castle having located a precious bloodstone

The game accepts the standard verb/noun format The sleeve notes give nothing away about the actual words involved but the vocabulary is supposed to be fairly large

Program *Nosferatu*
Price *£9 95*
Micro *Commodore 64*
Supplier *Terminal Software*
28 Church Lane
Prestwich
Manchester M25 5AJ

PUNCH & JUDY

Punchy is a multi screen arcade game from Mr Micro As you might expect the scenario involves Punch and July and various related characters

You are brave policeman Bobby and must pass all kinds of obstacles to rescue Judy who has been locked away in the Punch and Judy booth (it is probably a step up from being beaten about the head anyway)

There are 16 different screens and some of the obstacles include dodging rotten tomatoes, landing on a flying carpet and rocking the baby

An added feature of the game is speech output without using any additional hardware, rather like *Meteor Storm* The game looks excellent graphically and is pretty original too

Program *Punchy*
Price *£6 95*
Micro *Spectrum*
Supplier *Mr Micro*
PO Box 24
Swinton
Manchester M27 3AJ

LANGUAGE

As all we highly literate journalists know grammar is a matter of skill and years of professional expertise Should you wish to catch us up you might find The *Grammar Tree* from Sulis Software a help

This program covers all the basic features of language like sentences, phrases articles, adjectives and clauses giving you examples and exercises on each

Program *The Grammar Tree*
Price *£10 95*
Micro *BBC*
Supplier *John Wiley & Sons*
Baffins Lane
Chichester
Sussex PO19 1UD

BOARD GAME

City is a computer moderated board-style game for one to four players one of whom may be the computer

The idea is to accumulate £1,000 000 by developing and selling or leasing property — taking rents from factories shops pubs banks and so on

You are prevented from obtaining instant wealth by nasty things like taxes and other people competing for the same sites

The game uses hi-res graphics and sounds and a demo mode should help to get you started on your entrepreneurial career You get a nice box as well

Program *City*
Price *£6 95*
Micro *Spectrum 48K*
Supplier *Terminal Software*
28 Church Lane
Prestwich
Manchester M25 5AJ

CREEPING HANDS

The House of the Living Dead is the latest arcade game from Phipps Associates who are perhaps best known for their adventures

In this game you discover your holiday home is not all it seems and have to contend with the likes of vampire bats skeletons and creeping hands

True to Hammer horror tradition the only solution to this problem is to find a cross which has been divided into four pieces and scattered around one floor of the house

Assuming you manage to find all four pieces of the cross, you must then take them to the centre of the house All is not yet over, however for now you must ascend to the next storey

Program *House of the Living Dead*
Price *£5 90*
Micro *Spectrum 48K*
Supplier *Phipps Associates*
172 Kingston Road
Ewell KT19 0SD

MUMMIES

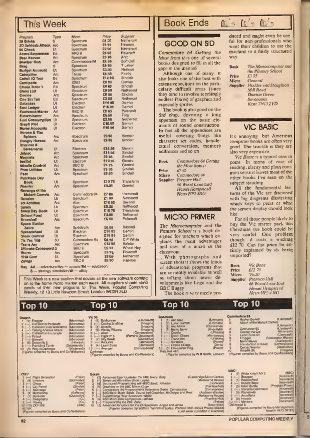
More adventure in Personal Software Service's *Krystals of Zong* In this game for the Commodore 64 you must gather treasures from various rooms whilst avoiding the snakes, bats spiders and mummies that pursue you

There are nine rooms in the game each containing a maze with treasure at its centre To get at it you will have to find the right key

It's very well done with plenty of thrills and spills

Program *Krystals of Zong*
Price *£7 95*
Micro *Commodore 64*
Supplier *PSS*
452 Stoney Stanton Road
Coventry CV6 5DG

New Releases is designed to let people know what software is coming on to the market If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases Popular Computing Weekly 12 13 Little Newport Street London WC2H 3LD



This Week

Program	Type	Micro	Price	Supplier
28 Bricks	S	Spectrum	£3 00	Nethercot
3D Seiddab Attack	Arc	Spectrum	£5 95	Hewson
86 Check	Ut	Spectrum	£2 06	Nethercot
Areas/Sequences	Ed	BBC B	£8 95	Polarsoft
Bear Bovver	Arc	Spectrum	£6 95	Artic
Beeber Run	Arc	Commodore 64	£4 95	Soft Cell
Brag	S	Spectrum	£4 95	T Lebon
Budget Account	Ut	Spectrum	£3.06	Nethcot
Caterpillar	Arc	Texas	£4.50	Firefly
Cattell IQ Test	Ed	Spectrum	£12 95	Sinclair
Centipede	Arc	ZX81	£8 50	Genius
Chess Tutor 1	Ed	Spectrum	£9 90	Sinclair
Class List	Ut	Spectrum	£8 90	Nethercot
Cookie	Arc	Spectrum	£8 95	Sinclair
Cos Sin Tan	Ed	Spectrum	£3 00	Nethercot
Database	Ut	Electron	£19 95	Gemini
Easi Ledger	Ut	Electron	£19.95	Gemini
Eastwood Manor	Ad	BBC B	£8 95	Polarsoft
Exterminator	Arc	Spectrum	£6.50	Torg
Fuel Consumption	Ut	Spectrum	£2.00	Nethercot
Graph Plot	Ut	Electron	£19.95	Gemini
Home Accounts	Ut	Electron	£19 95	Gemini
Horace & The Spiders	Arc	Spectrum	£8.95	Sinclair
Hungry Horace	Arc	Spectrum	£8.95	Sinclair
Invoices & Statements	Ut	Electron	£19.95	Gemini
Jetpac	Arc	Spectrum	£14 95	Sinclair
Magnets	Arc	Spectrum	£9 95	Sinclair
Mailist	Ut	Electron	£19 95	Gemini
Missile Control	Arc	BBC B	£4 95	Gemini
Print Utilities	Ut	Spectrum	£9 95	Sinclair
Psst	Arc	Spectrum	£9.95	Sinclair
Purchase Day Book	Ut	Spectrum	£10 75	Transform
Reactor	Arc	Spectrum	£8.95	Gemini
Revenge of the Mutant Camels	Arc	Commodore 64	£7 95	Llamasoft
Russian	Ut	Spectrum	£1 00	Nethercot
SS Achilles	Arc	Atari	£19 95	Beyond
Salary	Ut	Spectrum	£2.00	Nethercot
Sales Day Book	Ut	Spectrum	£10 75	Transform
School Fund	Ut	Spectrum	£3.00	Nethercot
Screwball	Arc	Spectrum	£6 95	Polarsoft
Space Station Zebra	Arc	Spectrum	£8.95	Beyond
Spreadsheet	Ut	Electron	£19 95	Gemini
Stock Control	Ut	Electron	£19 95	Gemini
Tic Tac Toe	3D	Commodore 64	£4 95	C P White
Trans Am	Arc	Spectrum	£14 95	Sinclair
Ultimate Crossword	S	BBC B	£9 95	Wheat Hey
Worm	Arc	Spectrum	£4 95	Polarsoft
YHA Cost	Ut	Spectrum	£3 90	Nethercot
Zalaga	Arc	BBC B	£6.90	Papillon

Key Ad — adventure/Arc — arcade/Ed — education/ S — strategy simulation/Ut — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to This Week, Popular Computing Weekly, 12 13 Little Newport Street London WC2R 3LD

Book Ends

GOOD ON SID

Commodore 64 Getting the Most from it is one of several books designed to fill in all the gaps in the manual

Although one of many it also looks one of the best with extensive sections on the particularly difficult areas (since they tend to involve seemingly endless *Pokes*) of graphics and especially sprites

The book is also good on the *Sid* chip, devoting a long appendix on the basic elements of sound construction In fact all the appendices are useful covering things like character set codes, hex/decimal conversion, memory addresses and so on

Book *Commodore 64 Getting the Most from it*
Price *£7 95*
Micro *Commodore 64*
Supplier *Prentice Hall, 66 Wood Lane End, Hemel Hempstead, Herts HP2 4RG*

MICRO PRIMER

The Microcomputer and the Primary School is a book designed for teachers which explains the main advantages and uses of a micro in the classroom

With photographs and screen shots it shows the kinds of educational programs that are currently available as well as talking about newer developments like Logo and the BBC Buggy

The book is very nicely produced and might even be useful for non-professionals who want their children to use the machine in a fairly structured way

Book *The Microcomputer and the Primary School*
Price *£3 95*
Micro *General*
Supplier *Hodder and Stoughton, Mill Road, Dunton Green, Sevenoaks, Kent TN13 2YD*

VIC BASIC

It's annoying but American computer books are often very good The trouble is they are also very expensive

Vic Basic is a typical case in point In terms of ease of reading, clarity and plain common sense it leaves most of the other books I've seen on the subject standing

All the fundamental features of the Vic are discussed with big diagrams illustrating which keys to press or what the screen display should look like

For all those people likely to buy the Vic starter pack this Christmas the book could be very useful One problem though it costs a whacking £12 70 Can the price be entirely explained by its being imported?

Book *Vic Basic*
Price *£12 70*
Micro *Vic20*
Supplier *Prentice/Hall, 66 Wood Lane End, Hemel Hempstead, Herts HP2 4 RG*

Top 10

Dragon

1	(8)	Frogger	(Microdeal)
2	(—)	Cuthbert in the Boots	(Microdeal)
3	(—)	Cuthbert Goes Walkabout	(Microdeal)
4	(—)	Talking Android Attack	(Microdeal)
5	(—)	Cuthbert in the Jungle	(Microdeal)
6	(—)	Pinball	(Microdeal)
7	(—)	Glaxxon	(Microdeal)
8	(5)	Dragonfly 2	(Hewson)
9	(—)	Franklin's Tomb	(Salamander)
10	(4)	Ring of Darkness	(Wintersoft)

(Figures compiled by Boots and Co/Websters)

Vic 20

1	(8)	Gridrunner	(Llamasoft)
2	(—)	Catcha Snatcha	(Imagine)
3	(1)	Arcadia	(Imagine)
4	(3)	Wacky Waiters	(Imagine)
5	(—)	Alien	(Commodore)*
6	(—)	Flight 015	(Ferranti Davenport)
7	(7)	Sky Hawk	(Quicksilva)
8	(—)	Aerazale	(Llamasoft)
9	(4)	Laser Zone	(Llamasoft)
10	(—)	Avenger	(Commodore)*

Cartridge
(Figures compiled by Boots and Co/Websters)

Spectrum

1	(1)	Atic Atac	(Ultimate)
2	(7)	Lunar Jetman	(Ultimate)
3	(8)	Ant Attack	(Quicksilva)
4	(5)	Manic Miner	(Bug-Byte)
5	(—)	Cookie	(Ultimate)
6	(—)	Death Chase	(Micromega)
7	(—)	Tranz-Am	(Ultimate)
8	(—)	Scrabble	(Psion)*
9	(—)	Oracle's Cave	(Doric)
10	(8)	Chequered Flag	(Psion)

Requires 48K
(Figures compiled by W H Smith, London)

Commodore 64

1	Hover Bovver	(Llamasoft)
2	Attack of the Mutant Camels	(Llamasoft)
3	Gridrunner 64	(Llamasoft)
4	Crimsal the Cat	(Mirrorsoft)
5	Lazer Zone 64	(Llamasoft)
6	Frogger	(Interceptor Micros)
7	Manic Miner	(Audiogenic)
8	Introduction to Basic	(Commodore)
9	Quintic Warrior	(Quicksilva)
10	Arcadia 64	(Imagine)

(Figures compiled by Boots and Co/Websters)

ZX81*

1	(—)	Flight Simulation	(Psion)
2	(8)	Invaders	(Quicksilva)
3	(—)	Chess	(Psion)
4	(—)	City Patrol	(Sinclair)
5	(—)	Sabotage	(Psion)
6	(4)	Mothership	(Softsync)
7	(1)	Defender	(Quicksilva)
8	(—)	Geography	(ICL)
9	(—)	History	(ICL)
10	(10)	ZX Fond	(Artic)

All 16K
(Figures compiled by Boots and Co/Websters)

Books

1	(2)	Advanced User Guide for the BBC Micro *Bray*	(Cambridge Micro Centre)
2	(1)	Spectrum Microdrive Book *Logan*	(Melbourne House)
3	(4)	Structured Programming with BBC Basic *Atherton*	(Horwood)
4	(8)	Graphics on the BBC Micro *Cryer*	(Prentice/Hall)
5	(—)	Commodore 64 Programmer's Reference Guide *Commodore*	(Commodore)
6	(—)	BBC Micro Book Basic Sound and Graphics *McGregor and Reid*	(Addison-Wesley)
7	(—)	Supercharge Your Spectrum *Webb*	(Melbourne House)
8	(6)	BBC Micro Disk Companion *Latham*	(Prentice Hall)
9	(—)	Programming the Z80 *Zaks*	(Sybex)
10	(3)	Advanced Graphics for the ZX Spectrum *Angell and Jones*	(Macmillan)

(Figures compiled by Watford Technical Books Watford 0923 23324 Prestel 26844)
(Last week's position in brackets)

BBC*

1	(7)	White Knight Mk 2	(BBC)
2	(—)	Snapper	(Acornsoft)
3	(1)	Rocket Raid	(Acornsoft)
4	(—)	Missile Base	(Acornsoft)
5	(3)	Killer Gorilla	(Program Power)
6	(—)	Starship Command	(Acornsoft)
7	(3)	Planetoids	(Acornsoft)
8	(—)	Arcadians	(Acornsoft)
9	(8)	Hopper	(Acornsoft)
10	(—)	Meteors	(Acornsoft)

All model B
(Figures compiled by Micro Management, Ipswich 0473 59181)

Ziggurat



A vested interest

The home computer market has boomed. And in its wake, has come a veritable avalanche of magazines which cover every conceivable aspect of the subject.

One feature which frequently astounds readers is the wide disparity in the opinions expressed in reviews on the same hardware or software in different magazines. How can it be that one magazine can hail a new machine as a "triumph of state-of-the-art microtechnology" whilst another dismisses it as "yet another ill-conceived attempt to cash in on the market"? It is not clear if this is the result of a deliberate outright bias, or of whether there is a more subtle explanation.

The greatest variation is seen between "specialist" publications, which are aimed at the products of a particular manufacturer and those covering a wider field of interest which have fewer axes to grind. It is a fact of life that certain magazines are actively supported by the manufacturer whose products they are describing, so it is unlikely that the editorial staff are going to rush lemming-like over the nearest cliff by slamming them! This assistance may be in the form of open financial support or more subtly by extensive advertising in the publication.

Whose interests should be considered, the producers or the users? Should a user magazine try to cover up the warts in a product to ensure that the manufacturer's market share, and ultimately its own, holds up, or should it try to help the poor unfortunate who has already bought a lemon to squeeze the most out of it instead? Of course, if the manufacturer retires hurt then the user is left high and dry, so neither of these extreme views is satisfactory and a sensible compromise between the needs of all parties must be reached for an effective publication.

The main purpose of a review is to provide the reader with an appreciation of a product and in particular an assessment of how it compares with the competition. Of course the view presented will be personal, and to some extent subjective, but no reviewer should set himself up as some sort of omniscient Supreme Being and must try to be as objective as possible.

A bad review almost always makes the manufacturer unhappy. The most frequent complaint is that the reviewer was ill-informed and has not mentioned the important features or advantages of their product. It is often difficult though for the reviewer to get this information. Although competent reviewers are experienced micro users, we have yet to meet one who was psychic. The producer is the obvious source of information, but extracting anything from some companies is like trying to get blood out of a stone. If you insist on hiding your light under a bushel then you can hardly complain when only the bushel is mentioned.

On the other hand, some companies provide masses of technical data and it is disconcerting to see this reproduced parrot fashion in the text without comment. Occasionally one sees reviews from which it was apparent that the nearest the writer got to testing the equipment was looking at a picture and a specification sheet over lunch!

It is probably inevitable that people who take the trouble to ensure that reviewers have all the information and assistance they need get better reviews than the others. This may not be such a bad thing — it is probably also a good indication of how they treat their customers. ■

Keith and Steven Brain

Puzzle

A new year

Puzzle No 88

In celebration of the still fairly new New Year, here is a puzzle based on the number 1984.

1	9	8	4
1	9	8	4

In the grid, the number has been entered twice. What you have to do is to fill in the rest of the grid so that every number down is a perfect square. Also, you should use every digit except for one, and the sum of the four squares should be as large as possible.

Solution to Puzzle No 83

As there are five digits in both the top line of the sum and the product, the first digit of the top line can only be a 1 or 2 (it cannot be a 3 as it isn't a bird symbol).

Similarly, we can see that the last digit of the top line cannot be a 0 or a 1 as this would involve a duplication of either this digit or the bird symbol in the bottom line.

The program generates all possible sets of values and tests to see that no digits are duplicated (except for the 3 in the product).

```
10 FOR A = 1 TO 2 20 FOR B = 0 TO 9 30 IF A = B THEN GOTO 280 40 FOR C = 0 TO 9 50 IF C = A OR C = B THEN GOTO 270 60 FOR D = 0 TO 9 70 IF D = A OR D = B OR D = C THEN GOTO 260 80 FOR E = 2 TO 9 90 IF E = A OR E = B OR E = C OR E = D THEN GOTO 250 100 LET P = (A * 10000 + B * 1000 + C * 100 + D * 10 + E) * 3 110 LET P$ = STR$ P 120 IF P$(2) <> "3" THEN GOTO 250 130 FOR M = 1 TO 4 140 FOR N = M + 1 TO 5 150 IF P$(M) = P$(N) THEN GOTO 250 160 NEXT N 170 NEXT M 180 LET Q$ = STR$ (P/3) 190 FOR M = 1 TO 5 200 FOR N = 1 TO 5 210 IF P$(M) = Q$(N) THEN GOTO 250 220 NEXT N 230 NEXT M 240 PRINT P$, Q$ 250 NEXT E 260 NEXT D 270 NEXT C 280 NEXT B 290 NEXT A
```

This provides the only possible solution: 17694 * 3 = 53082.

Winner of Puzzle No 83

The winner is Alan Turnbull, Vicarage Road, Cale Green, Stockport, Cheshire, who receives £10. Although the solution given above is in Basic, Alan's winning entry was written in Pascal and run using the Hisoft Pascal 4T on the 48K Spectrum.





Automata U.K. Ltd.
presents:
PI-EYED
£6
for 48K SINCLAIR ZX SPECTRUM
©AUTOMATA U.K. LTD 1984
PI-EYED program by Andrew Stagg, artwork by Robin Evans, vocals by Lurch the Office Parrot (at least we think he's a parrot)
THE STORY SO FAR ... Once, a long time ago in 1983, the PiMan was a pillar of society a sober, boring little prude. "PIMANIA" & "GROUCHO" changed all that, as the PiMan shot to international megastardom on TV... he's a right little cult. It's all been so much, too fast. He's hitting the bottle .. weaving from pub to pub, causing mayhem & mess on the floor. AUTOMATA proudly gives the world our COMEDY ARCADE GAME "PI-EYED" and don't forget the heart-rending message of the FREE HIT RECORD on the flipside!
Kempston Joystick compatible 100% M/C .. 24 HOUR MAIL ORDER SERVICE OPERATING NOW ! tel. 0705 735242 for credit card sales, or send cheques, P.O.s for £6 NO EXTRAS. Hic
27 HIGHLAND ROAD
PORTSMOUTH HANTS
PO4 9DA ENGLAND
ORWELL, it's 1984 already!
IT'S THE STUPIDEST DIARY I WAS EVER GIVEN THERE'S NO ROOM TO WRITE ANYTHING SOME BLOKE CALLED WINSTON SMITH'S BEEN AT IT!
BIG PIMAN IS WATCHING YOU
MEMO TO EVANS STOP MAKING ME LOOK LIKE FAGIN, OR I'LL CUT YOUR GRUEL RATION - CROUCHER
I LOVE
BUT MEANWHILE, BACK AT THE COMIC STRIP, THE PIMAN'S FAME IS GOING TO HIS HEAD!
RIGHT, I'M OFF TO DO THIS WEEK'S AD! DON'T WAIT UP..
HOLD YOUR HORSES, I'LL BE RIGHT ALONG!
ME TOO ! I'VE JUST GIVEN MY WIG A LEMMING SHAMPOO!
THAT'S WHY IT KEEPS JUMPING OFF!!
I SHAN'T REQUIRE YOUR SERVICES FROM NOW ON! I THINK THIS STRIP IS GETTING TOO CROWDED!
WHA?
HUH?
BESIDES, I'M MEETING A YOUNG LADY!
WELL, I HOPE SHE FINDS HER GLASSES!
WHERE TO, BOSS?
Evans
I DON'T NEED YOU MORRIS I GOT THIS NEW RUNABOUT!
WE'D BETTER TELL CROUCHER AND PENFOLD ABOUT THIS BUSINESS!
PI 2
VROOM
DAYS (AND NIGHTS) LATER...
JUST LOOK AT THIS VULGAR PHOTO IN THE 'NOSE OF THE WORLD!'
PIMAN and DANIELLA."Just good friends"
'PIMAN ON SKIDS'! I THOUGHT YOU WERE KEEPING A WATCHFUL EYE OVER HIM!
OH, WE WERE!
AND HE GAVE US SOME GREAT IDEAS FOR OUR NEW GAME!
PI-EYED
TO WIT, PI-EYED A COMEDY ARCADE GAME OF PUB-CRAWLING MAYHEM
YEAH, I'VE JUST BEEN PLAYING IT! IT'S NOT ONLY CLEVER, IT'S FUN, MAN! OH, GOLLY, IS IT FUN!!
PI-DOG
PLUS A NEW GROOVALONG SONG ON SIDE B, BY LURCH, THE OFFICE PARROT (WELL WE THINK HE'S A PARROT)
thanks to everyone for christmas cards & solidarity over "GO TO JAIL"